Vol. 1024 Number 5

OFFICIAL GAZETTE

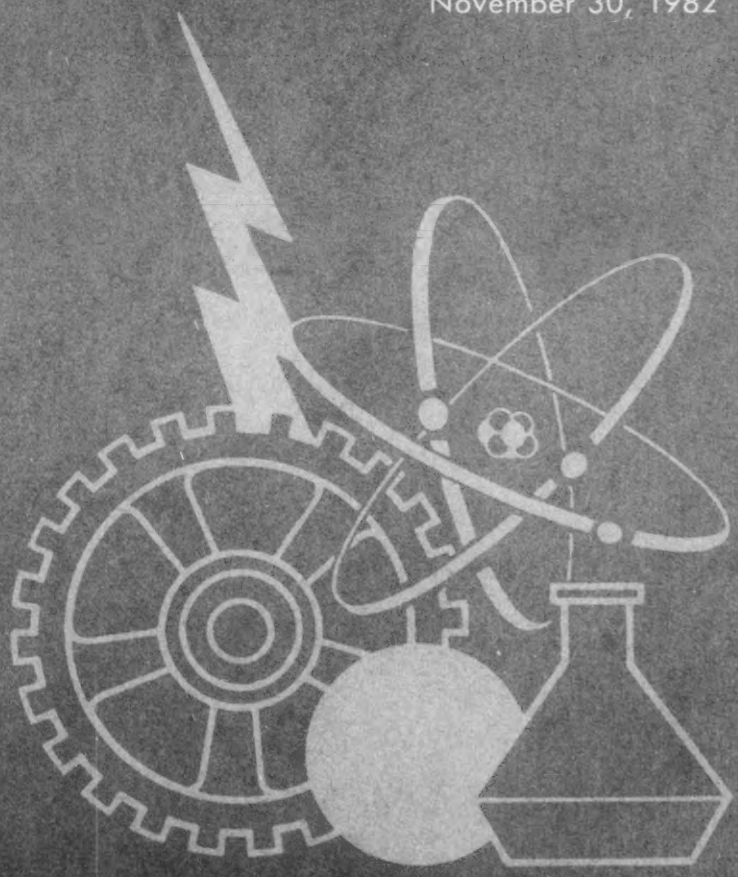
of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

November 30, 1982



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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

November 30, 1982 Volume 1024 Number 5

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes, see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981. For use of the European Patent Office as a searching authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the international fees have been increased as of Jan. 1, 1982 and that the domestic PCT fees have been increased as of Oct. 1, 1982. Domestic PCT fees were increased by a rule change which was published at 1021 O.G. 11 on Aug. 10, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	710.00
International Fees	
Basic Fees (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation fee (for each national or regional office)	65.00

DONALD J. QUIGG,
Sept. 10, 1982. *Deputy Commissioner of Patents & Trademarks.*

Board of Appeals Decisions Rendered in the Month of Oct. 1982

Affirmed	179
Affirmed in Part	21
Reversed	52
Total	252

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,739,691, Re. S.N. 428,005, Filed Sept. 29, 1982, Cl. 91/506, FLUID DEVICE, Wilfred S. Bobier, Owner of Record: *Inventor,* Attorney or Agent: John G. Batchelder, Ex. Gp.: 343

3,932,407, Re. S.N. 421,501, Filed Sept. 22, 1982, Cl. 548/256, OPTIONALLY SUBSTITUTED 1,2,3,5-TETRAHYDROIMIDEZO (2,1-B)-QUINAZOLIN-2-ONES, Warren N. Beverung, Jr., et al., Owner of Record: *Bristol-Myers Co., New York, N.Y.,* Attorney or Agent: Joseph M. Fitzpatrick, et al., Ex. Gp.: 121

3,979,548, Re. S.N. 417,847, Filed Sept. 14, 1982, Cl. 428/425, POLYURETHANE COATED SAFETY GLASS, Wolfgang Schafer, et al., Owner of Record: *Saint Gobain Industries, Neuilly-sur-Seine, France,* Attorney or Agent: John T. Synnestvedt, et al., Ex. Gp.: 164

4,020,197, Re. S.N. 414,875, Filed Sept. 3, 1982, Cl. 427/304, PROCESS FOR THE CATALYTIC SENSITIZATION OF NON-METALLIC SURFACES FOR SUBSEQUENT ELECTROLESS METALLIZATION, Horst Steffen, Owner of Record: *Kollmorgen Technologies Corp., Dallas, Tex.,* Attorney or Agent: George B. Finnegan, Jr., et al., Ex. Gp.: 162

4,047,652, Re. S.N. 393,231, Filed June 29, 1982, Cl. 225/54, TICKET DISPENSING ASSEMBLY FOR DISPENSING TICKETS FROM A FLEXIBLE STRIP, Ake Ehrlund, Owner of Record: *AB Turn-O-Matic, Sundbyberg, Sweden,* Attorney or Agent: Karl A. Limbach, et al., Ex. Gp.: 324

4,121,004, Re. S.N. 393,289, Filed June 29, 1982, Cl. 428/43, STRIP ROLL FOR USE IN DISPENSING TICKETS, Ake Ehrlund, Owner of Record: *AB Turn-O-Matic, Sundbyberg, Sweden,* Attorney or Agent: Karl A. Limbach, et al., Ex. Gp.: 164

4,141,788, Re. S.N. 428,321, Filed Sept. 29, 1982, Cl. 162/125, METHOD OF AND MEANS FOR FORMING MULTI-PLY WEBS FROM A SINGLE HEADBOX, Edgar J. Justus, Owner of Record: *Beloit Corp., Beloit, Wis.,* Attorney or Agent: Benjamin H. Sherman, et al., Ex. Gp.: 173

4,241,056, Re. S.N. 420,804, Filed Sept. 21, 1982, Cl. 424/226, PENICILLINS AND SALTS THEREOF, Bernd Wetzel, et al., Owner of Record: *Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany,* Attorney or Agent: Nelson Littell, Jr., et al., Ex. Gp.: 125

4,265,370, Re. S.N. 374,021, Filed May 3, 1982, Cl. 222/25, PORTABLE LIQUID METERING DEVICE, David H. Reilly, Owner of Record: *Electro-Data Systems, Inc., Fort Lauderdale, Fla.,* Attorney or Agent: Joseph Zallen, Ex. Gp.: 311

4,281,930, Re. S.N. 415,311, Filed Sept. 7, 1982, Cl. 356/350, LASER GYRO WITH PHASED DITHERED MIRRORS, Thomas J. Hutchings, Owner of Record: *Litton Systems, Inc., Beverly Hills, Calif.,* Attorney or Agent: Walter R. Thiel, et al., Ex. Gp.: 257

4,284,655, Re. S.N. 429,220, Filed Sept. 30, 1982, Cl. 426/602, LOW-FAT COMESTIBLE SPREAD SUBSTITUTES, Donald E. Miller, et al., Owner of Record: *SCM Corp., Cleveland, Ohio,* Attorney or Agent: Richard H. Thomas, et al., Ex. Gp.: 172

4,297,140, Re. S.N. 427,682, Filed Sept. 29, 1982, Cl. 428/310, CERAMIC FOAM CEMENT, Robert J. Paisley, Owner of Record: *Corning Glass Works, Corning, N.Y.,* Attorney or Agent: Richard N. Wardell, Ex. Gp.: 164

4,309,729, Re. S.N. 417,567, Filed Sept. 13, 1982, Cl. 360/72.1, MAGNETIC TAPE CASSETTE REPRODUCING AND/OR RECORDING SYSTEM, Warren B. Kice, Owner of Record: *Inventor,* Attorney or Agent: Joseph M. Lane, et al., Ex. Gp.: 235

4,327,541, Re. S.N. 428,531, Filed Sept. 30, 1982, Cl. 56/16.8, UNIVERSAL LAWN SPREADER ATTACHMENT FOR LAWN MOWERS, Edward P. Emory, Owner of Record: *Inventor,* Attorney or Agent: C. Emmett Pugh, et al., Ex. Gp.: 333

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the

requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

4,302,465, Reexam. No. 90/000,281, Requested: Oct. 26, 1982, Cl. 424/267, THERAPEUTICALLY ACTIVE, SUBSTITUTED PIPERIDINES AND PYRROLIDINES THERAPEUTIC COMPOSITIONS THEREOF AND METHODS OF USE THEREOF, Bo T. AF Ekenstam, et al., Owner of Record: *Inventor,* Attorney or Agent: Brumbaugh, et al., Ex. Gp.: 125, Requester: Bo T. AF Ekenstam, et al., c/o The Attys. Of Record, New York, N.Y.

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of default sent by certified mail to the registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives, shall enter an appearance within thirty days from the date of publication, judgment will be entered against registrant and said registration will be cancelled.

Export Service Priorities, Inc., Memphis, Tenn., Reg. No. 1,061,853 for the mark "ESP", Can. No. 13,289.

ERMA S. BROWN,
Deputy Clerk of the Trademark Trial and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by certified mail to each registrant at the last know adress having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of publication, the cancellation will be proceeded with as in the case of default.

Valley Paper Co., Holyoke, Mass., Reg. No. 516,702, for the mark "VALLEY FORGE", Can. No. 13,239.

Wayne Cooling Equipment Corp., Brooklyn, N.Y., Reg. No. 791,818, for the mark "TRANS-AIRE", Can. No. 13,268.

On The Go Communications, Inc., Brooklyn, N.Y., Reg. No. 1,073,131, for the mark "ON THE GO" and design, Can. No. 13,299.

London & Co., Inc., Elizabeth, N.J., Reg. No. 816,786, for the mark "BORINQUEN", Can. No. 13,301.

Melton Shirt Co., New York, N.Y., Reg. No. 810,161, for the mark "MELTON", Can. No. 13,312.

The H. P. Snyder Manufacturing Co., Inc., assignee of D. P. Harris Hardware & Manufacturing Co., Inc., Little Falls, N.Y. Reg. No. 771,425, for the mark "TOUR DE FRANCE", Can. No. 13,315.

Wells Pizza, Inc., Wichita, Kan., Reg. No. 1,064,140, for the mark "SUPER SUPPER SPECIAL", Can. No. 13,326.

Park 'N Sell, Belleville, Ill., Reg. No. 1,071,129, for the mark "PARK 'N' SELL" and design, Can. No. 13,334.

E. S. Corp., assignee of Kalso Systemet, Inc., New York, N.Y., Reg. Nos. 928,348; 1,045,476 and 1,071,031, all for the mark "EARTH", Can. No. 13,335.

Sheffield Watch of New York, Inc., by change of name from Sheffield Watch, Inc., New York, N.Y., Reg. No. 848,621, for the mark "SHEFFIELD NEVER A DULL MOMENT", Can. No. 13,339.

GRT Corp., Los Angeles, Calif., Reg. No. 1,111,254, for the mark "SHOCK" and design, Can. No. 13,343.

Kenneth J. Hunn, San Francisco, Calif., Reg. No. 1,118,454, for the mark "EARTHTREK EXPEDITIONS", Can. No. 13,349.

Vogarell Products, Inc., assignee of Rosemarie Lewis, d.b.a. Vogarell Product Co., Los Angeles, Calif., Reg. No. 509,082, for the mark "HEMEX", Can. No. 13,352.

Petrous Electronics Corp., Compton, Calif., Reg. No. 1,181,933, for the mark "SOLARIS", Can. No. 13,353.

Chemtest Products, Inc., assignee, by assignment and change of name, of Katz Drug Co., Kansas City, Mo., Reg. No. 410,079, for the mark "CHEMTEST" and design, Can. No. 13,356.

Anthony L. Christopher, d.b.a. The Amel Co., Chelsea, Mass., Reg. No. 1,085,250, for the mark "HOT CHOC LET" and design, Can. No. 13,363.

MBM Knits, Inc., New York, N.Y., Reg. No. 1,084,906, for the mark "APERITIF", Can. No. 13,372.

Bourjois, Ltd., assignee, by mergers, and change of name, of Bourjois, Inc., New York, N.Y., Reg. Nos. 255,826; 308,895; 310,371; 412,982; and 575,238; all for the mark "EVENING IN PARIS", Can. No. 13,375.

Daisy's Originals, Inc., Miami, Fla., Reg. No. 654,159, for the mark "ORVIETO CREATIONS FROM ITALY TO MIAMI" and design, Can. No. 13,380.

World Wide Stereo and Sewing Centers, Inc., Dallas, Tex., Reg. No. 1,148,760, for the mark "OMEGO" and design, Can. No. 13,382.

Pharr Vegetable Co., Pharr, Tex., Reg. No. 733,492, for the mark "TRIO" and design, Can. No. 13,383.

Revelation Supplies Ltd., Washington, D.C., Reg. No. 562,233, for the mark "REVELATION", Can. No. 13,387.

Small Motors, Inc., assignee, by mesne assignment, of Dustronic Corp., Chicago, Ill., Reg. No. 438,827, for the mark "DUSTRONIC", Can. No. 13,408.

The Brass Gas Exchanger Manufacturing Co., Inc., d.b.a. Denham Enterprises, San Mateo, Calif., Reg. No. 1,101,229, for the mark "THE GAS HOG", Can. No. 13,410.

Nutrine, Ltd., assignee of Middlebrooke-Lancaster, Inc., Brooklyn, N.Y., Reg. No. 735,461, for the mark "DUAL", Can. No. 13,417.

Lawn Barber Corp., North Hollywood, Calif., Reg. No. 819,057, for the mark "LAWN BARBER" and design, Can. No. 13,427.

Enfield Enterprises, Inc., Greenville, R.I., Reg. No. 1,097,172, for the mark "PUROGENE", Can. No. 13,440.

Surgical Mfg. Co., Inc., assignee of Shane Uniform Co., Inc., Huntington, N.Y., Reg. No. 887,534, for the mark "PHILIP MARTIN III", Can. No. 13,443.

Orosi Foothill Citrus Association, Orosi, Calif., Reg. No. 417,505, for the mark "TOM CAT", Can. No. 13,461.

Bourjois, Ltd., assignee, by merger, of Bourjois, Inc., New York, N.Y., Reg. No. 389,047 for the mark "SOIR DE PARIS"; and Reg. Nos. 899,957; 902,764; 960,162; and 964,481, all for the mark "SOIR DE PARIS" and design, Can. No. 13,463.

W. P. Kelleher, Jr., d.b.a. Patrico's Spaghetti Bowl, Parma, O., Reg. No. 1,038,295, for the mark "PATRICO'S SPAGHETTI BOWL" and design, Can. No. 13,480.

ERMA S. BROWN,
Deputy Clerk of the Trademark Trial and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

Errata

"All reference to Patent No. 4,336,493 to William D. Gregory, Larry H. Capots and Luigi Morelli of Va. and John Muhlke III and Thomas A. Nolan, Jr. of Md. for IDENTIFICATION OF MATERIALS USING THEIR COMPLEX DIELECTRIC RESPONSE appearing in the Official Gazette of June 22, 1982 should be deleted since no patent was granted."

"All reference to Patent No. 4,341,020 to Donald H. Bailey of Mich. for PRECISION TOOLS AND PRECISION TOOL SETS, AND METHODS OF CONSTRUCTING AND UTILIZING SAME appearing in the Official Gazette of July 27, 1982 should be deleted since no patent was granted."

"All reference to Patent No. 4,346,570 to Toshiaki Nakamura and Naoyuki Kuramoto both of Japan for NOISE RESISTANT UNIVERSAL JOINT appearing in the Official Gazette of Aug. 31, 1982 should be deleted since no patent was granted."

"All reference to Patent No. 4,349,334 to David E. Webb and Lawrence F. Andrews, both of Calif. for ORTHODONIC BRACKET ASSEMBLY appearing in the Official Gazette of Sept. 14, 1982, should be deleted since no patent was granted."

"All reference to Patent No. 4,350,439 to Hiroshi Tanioka of Japan for COPYING APPARATUS appearing in the Official Gazette of Sept. 21, 1982 should be deleted since no patent was granted."

Patents Available for License or Sale

D. 265,568. TAPE DISPENSER. *Roger-Kalifa,* Correspondence to: *Sandler & Greenblum,* 701 South 23rd St., Arlington, Va. 22202.

3,844,037. CABLE CUTTER. *Carl F. Geller,* Luner Damm 17 3140 Luneburg, Germany. Correspondence to: *Michael J. Striker* 360 Lexington Ave., New York, N.Y. 10017.

3,392,127. COMPOSITION OF POLYESTER RESIN AND SODIUM SILICATE. Inquiries should be directed to: *Michael I. Wolfson, Esq, Blum, Kaplan, Friedman, Silberman & Beran,* 730 Third Ave., New York, N.Y. 10017 (212) 867-2200.

4,205,666. PASSIVE RANGE OF MOTION APPLIANCE. *John P. Kapp,* 751 Oleander Dr., Oxnard, Calif. 93030.

4,279,427. SKI-EDGING DEVICE FOR SNOWMOBILES. *John P. Shannon, Jr., Esq., Lane, Aitken, Kice & Kananen,* 1100 Ring Bldg., 1200 18th St. N.W. Washington, D.C. 20036, 202-466-8090.

4,287,514. MAIL ANNOUNCER. *Carl E. Wartman,* Mail Announcer, Inc. P.O. Box 117, Cocoa Beach, Fla. 32931.

4,136,764. MOTHER ALICE'S BREAD VENDING MACHINE. *Alice Johnson,* 8650 Belford Ave. #1, Los Angeles, Calif. 90045 (213) 645-4476.

4,255,697. CASH REGISTER POWER SUPPLY SYSTEM. *James A. Oliff, Esq, Stevens, Davis, Miller & Mosher,* 1911 Jefferson Davis Hwy., Suite 600, Crystal Mall 1, Arlington, Va. 22202, 703-920-8900.

4,299,268. AUTOMATICALLY CONTROLLED CASTING PLANT. *James A. Oliff, Stevens, Davis, Miller & Mosher,* 1911 Jefferson Davis Hwy., Suite 600, Crystal Mall 1, Arlington, Va. 22202, 703-920-8900.

4,315,628, CARD GAME INVOLVING THE TOURCHING OF HUMAN BODY PARTS. *Charles M. Balash,* 3917 Lymestone Dr., Hollywood, Fla. 33026.

4,319,748. SPORT TRAINING DEVICE. *Efim Alter,* 7533 Horrocks St., 1st Fl., Philadelphia, Pa. 19152.

4,321,461. FLOW RATE MONITOR AND TOTALIZER WITH COUNT DISPLAY. *David E. Walter* and *Max G. Kolmes.* Correspondence to: *Nathaniel A. Humphries,* 1730 Rhode Island Ave., N. W., Washington, D.C. 20036-3156 (202) 293-2010.

4,322,927 METHOD OF MAKING STAIRCASES AND STAIRCASE MADE THEREBY. *Kenneth Eli Scott,* Correspondence to: *Holman & Stern,* 2401 -15th St., N. W., Washington, D.C. 20009.

4,332,391 UNIVERSAL MECHANICAL SEAL GLAND. *William A. Arnold.* Correspondence to: *Nathaniel A. Humpries, Mason, Fenwick & Lawrence,* 1730 Rhode Island Ave., N. W., Washington, D.C. 20036-3156 (202) 293-2010.

4,333,568 CASSETTE TAPE DUST COVER. *Karl D. Weldin,* Correspondence to: *James N. Dresser,* 1819 H St., N. W. Suite 1100, Washington, D.C. 20006

The RCA Corp. offers to grant non-exclusive licenses on reasonable terms and conditions under the patents listed below. Inquiries respecting licenses under RCA patents should be addressed to RCA Corp., Sr. Vice President, Licensing, 30 Rockefeller Plz., New York, N.Y. 10020.

4,338,528. OPTIMIZATION CIRCUIT FOR A SERRODYNE FREQUENCY TRANSLATOR.

4,338,543. CRT WITH ARC SUPPRESSION MEANS THEREIN.

4,338,549. VERTICAL DEFLECTION CIRCUIT.

4,338,582. ELECTRONICALLY TUNABLE RESONATOR CIRCUIT.

4,338,584. TELEVISION DEFLECTION YOKE MOUNT.

4,338,609. SHORT HORN RADIATOR ASSEMBLY.

4,339,281. SHANK DIAMOND CLEANING.

4,339,285. METHOD FOR FABRICATING ADJACENT CONDUCTING AND INSULATING REGIONS IN A FILM BY LASER IRRADIATION.

4,339,469. METHOD OF MAKING POTASSIUM, CESIUM, RUBIDIUM, ANTIMONY PHOTOCATHODE.

4,339,470. FABRICATING AMORPHOUS SILICON SOLAR CELLS BY VARYING THE TEMPERATURE OF THE SUBSTRATE DURING DEPOSITION OF THE AMORPHOUS SILICON LAYER.

4,339,471. METHOD OF COATING SUBSTRATES WITH AN ABRASIVE LAYER.

4,339,528. ETCHING METHOD USING A HARDENED PVA STENCIL.

4,339,529. ETCHING METHOD USING A PVA STENCIL CONTAINING N-METHYLOL ACRYLAMIDE.

4,339,645. RF HEATING COIL CONSTRUCTION FOR STACK OF SUSCEPTORS.

4,339,682. ROTATIVE MOTOR USING A PIEZOELECTRIC ELEMENT.

4,339,753. VEHICLE IDENTIFICATION SYSTEM.

4,339,770. SYNCHRONIZING SYSTEM WITH CHROMA PARITY DETECTION.

4,339,784. SOLDER DRAW PAD.

4,339,809. NOISE PROTECTION CIRCUITS.

4,339,827. AUTOMATIC TUNING CIRCUIT ARRANGEMENT WITH SWITCHED IMPEDANCES.

4,340,167. COATED PRINTED CIRCUIT WIRING BOARD AND METHOD OF SOLDERING.

4,340,629. HIGH DENSITY INFORMATION DISC.1

4,340,803. METHOD FOR INTERCONNECTING SOLAR CELLS.

4,340,940. HARDWARE REDUCTION BY TRUNCATION OF SELECTED NUMBER OF MOST SIGNIFICANT BITS FOR DIGITAL VIDEO SYSTEM USING SUBSAMPLING AND ADAPTIVE RECONSTRUCTION.

4,340,949. PROCESSOR CONTROLLED VIDEO DISC SERVO SYSTEM.

4,340,954. STYLUS TIP FABRICATION FROM A SYNTHETIC DIAMOND STONE.

4,340,956. MINIMUM TRACKING FORCE STYLUS.

4,340,959. OPTICAL RECORDING MEDIUM WITH A THICK OVERCOAT.

4,341,427. METHOD FOR STABILIZING THE ANODE SENSITIVITY OF A PHOTOMULTIPLIER TUBE.

4,341,437. STYLUS TIP POSITIONING TECHNIQUE.

4,341,472. METHOD AND APPARATUS FOR POSITIONING A TAPERED BODY.

4,341,545. BEADING APPARATUS FOR MAKING AN ELECTRON GUN ASSEMBLY HAVING SELF-INDEXING INSULATING SUPPORT RODS.

4,341,591. METHOD OF FABRICATING A COLOR-SELECTION STRUCTURE FOR A CRT.

4,341,613. APPARATUS FOR ELECTROFORMING.

4,341,861. AQUEOUS DEVELOPABLE POLY-(OLEFIN SULFONE) TERPOLYMERS.

4,341,952. VARIABLE PITCH GROOVED LABEL FOR VIDEO DISC.

4,342,001. DIFFERENTIAL AMPLIFIER HAVING A LOW-PASS CHARACTERISTIC.

4,342,005. TELEVISION INTERMEDIATE FREQUENCY AMPLIFIER WITH FEEDBACK STABILIZATION.

4,342,109. CARRIAGE ALIGNMENT APPARATUS FOR VIDEO DISC PLAYER.

Otis Engineering Corp. is prepared to grant licenses under the following patents upon reasonable terms. Address inquiries to Patent Attorney, Otis Engineering Corp., P. O. Box 34380, Dallas, Tex. 75234, Telephone (214) 323-3882.

3,454,029. VALVES.

3,533,430. SHUTTLE VALVE.

3,654,962. VALVES.

3,756,260. VALVES.

4,095,424. VARIABLE HYDRAULIC PUMP NONLINEAR CONTROL WITH CAM-ACTUATED, ADJUSTABLY-SEQUENCED SECONDARY CONTROL.

4,117,563. THREAD CHASER TOOL FOR CONTIGUOUS STRAIGHT AND TAPERED THREAD RUNS.

4,142,597. MECHANICAL DETENT JARS.

4,155,022. LINE FLOW ELECTRIC POWER GENERATOR.

4,162,713. PLANETARY TRANSMISSION WITH HYDRAULIC ENGAGEMENT AND DISENGAGEMENT.

4,166,475. SAFETY COUPLING.

4,174,729. PRESSURE SENSING SAFETY DEVICE.

4,175,987. LOW ALLOY TEMPERED MARTENSITIC STEEL.

4,234,167. AUTOMATIC INHAUL WINCH SYSTEM.

4,258,794. UNDERWATER COMPLETION HABITAT.

4,276,482. LINE FLOW ELECTRIC POWER GENERATOR.

4,322,992. CHIP WASHING SYSTEM.

Cornell Research Foundation, a wholly owned nonprofit subsidiary of Cornell University is prepared to grant non-exclusive or limited-term exclusive licenses under the following patents upon reasonable terms and conditions.

Applications for licenses should be addressed to Cornell Research Foundation, East Hill Plz., Ithaca, N.Y. 14850 (607/256-7267).

3,961,102. SCANNING ELECTRON MICROSCOPE FABRICATION OF OPTICAL GRATINGS.

3,973,219. VERY RAPIDLY TUNED CW DYE LASER.

4,010,255. SEX PHEROMONE FOR POTATOE TUBEWORM MOTH, PATHORIMEA OPERCULELLA.

4,045,677. INTENSE ION BEAM GENERATOR.

4,061,504. APPARATUS FOR CLEANING AUTOMATIC MILKING MACHINES.

4,065,780. TUNNEL INJECTION OF MINORITY CARRIERS IN SEMI-CONDUCTORS.

4,094,097. METHOD FOR PREPARING A PESTICIDALLY RESISTANT RHIZOBIUM AND AGRONOMIC COMPOSITION THEREOF.

4,160,024. MICROBIAL CONTROL OF SEED AFFECTING PESTS.

4,161,814. TUNNEL INJECTION OF MINORITY CARRIERS IN SEMI-CONDUCTORS.

4,164,559. COLLAGEN DRUG DELIVERY DEVICE.

4,168,262. ANHYDRIDE MODIFIED MICROBIAL PROTEIN HAVING REDUCED NUCLEIC ACID LEVELS.

4,181,738. CATECHOLAMINE DERIVATIVES, A PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS THEREOF.

4,195,130. PROPAGATION OF FELINE INFECTIOUS PERITONITIS VIRUS IN TISSUE CULTURES.

4,213,965. SMALL-PLAQUE VARIANT CANINE HERPESVIRUS VACCINE.

4,215,200. CHEMICALLY AND ENZYMATICALLY MODIFIED COLLAGEN, HEMOSTATIC AGENT.

4,230,684. METHOD FOR DETERMINING STEROIDS IN HUMAN BODY LIQUIDS.

4,242,359. SPERMICIDAL AGENTS.

4,266,138. DIAMOND TARGETS FOR PRODUCING HIGH INTENSITY SOFT X-RAYS AND A METHOD OF EXPOSING X-RAY RESISTS.

4,271,070. CHEMICALLY ENZYMATICALLY MODIFIED COLLAGEN HEMOSTATIC AGENT.

4,276,284. PREVENTION OF COLLAGENASE INDUCED DISEASE BY TREATMENT WITH COLLAGENASE INHIBITORS.

4,277,342. COMBINED BIOLOGICAL-CHEMICAL DETOXIFICATION OF ORGANICS.

4,290,848. ION-RING IGNITOR FOR INERTIAL FUSION.

4,306,022. COCOA BEAN CELL CULTURE.

4,306,027. PESTICIDALLY RESISTANT RHIZOBIUM AND AGRONOMIC USE THEREOF.

4,327,115. CLARIFICATION OF FRESH PASTEURIZED AND FERMENTED JUICE WITH HONEY.

4,335,210. METHOD OF PRODUCING L-CYSTEINE.

General Electric Co. is prepared to grant non-exclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Applications for license may be addressed to: General Electric Co., Component Motor Division, 1635 Broadway, P.O. Box 2204, Fort Wayne, Ind. 46801-2204, Attention: Patent Counsel.

3,668,489. FREQUENCY DOUBLER MOTOR DRIVE AND MOTOR.

3,698,063. APPARATUS FOR INSERTING COIL SIDE TURN PORTIONS AND INSULATORS INTO THE SLOTS OF A MAGNETIC CORE.

3,722,063. APPARATUS FOR INSERTING INSULATORS AND COIL TURNS INTO THE SLOTS OF A MAGNETIC CORE.

3,829,953. APPARATUS AND METHOD FOR FORMING INSULATORS AND APPARATUS AND METHOD FOR INSERTING COIL TURN PORTIONS OR INSULATORS INTO THE LOTS OF A MAGNETIC CORE.

3,879,841. METHOD FOR ESTABLISHING WINDING LEAD WIRES FOR WINDINGS SUPPORTED ON MAGNETIC CORES.

4,270,063. MOTOR HAVING ADAPTED SHAFT AND SHAFT ADAPTER.

Applications for license may be addressed to: Division Patent Counsel Power Delivery Division, General Electric Co., 6901 Elmwood Ave., Philadelphia, Pa. 19142.

4,339,641. NOZZLE FOR A PUFFER-TYPE CIRCUIT BREAKER.

4,338,144. METHOD OF PRODUCTING SILICON-IRON SHEET MATERIAL WITH ANNEALING ATMOSPHERES OF NITROGEN AND HYDROGEN.

Applications for license may be addressed to: Division Patent Counsel Power Delivery Division General Electric Co. 6901 Elmwood Ave. Phila., Pa. 19142.

3,725,769. DIGITAL REGULATOR AND METHOD OF CURRENT REGULATION. Patented on Apr. 3, 1973 on an application of Robert P. DePuy.

3,906,336. SEMICONDUCTOR VALVE ASSEMBLY AND BUS ARRANGEMENT FOR HIGH CURRENT LOW VOLTAGE ELECTRIC POWER CONVERTER. Patented on Sept. 16, 1975 on an application of Robert P. DePuy.

Applications for licenses may be addressed to the Division Patent Counsel, General Electric Co., Bldg. 2, Room 205, Electronics Park, Syracuse, N.Y. 13221.

4,197,104. MAGNETIC TAG PROCESS.

4,198,307. POLYMER BASED MAGNETIC TAGS.

4,204,211. CONTROLLABLE SATURATION SIDELOBE CANCELLER.

4,204,262. OPTICAL SIGNAL PROCESSING APPARATUS.

4,208,734. UNDERWATER COMMUNICATION SYSTEM.

4,219,804. SENSOR FOR ELECTROMAGNETIC WAVES CAUSED BY NUCLEAR DETONATION.

4,222,330. MAGNETICALLY TAGGING AMMUNITION CARTRIDGES.

4,240,036. LINEARIZED THREE-STATE SWITCHING AMPLIFIER.

4,241,264. SAMPLED DATA FILTERING AND MULTIPLEXING APPARATUS.

Request for Removal of Patents from the Patent Office Register

The General Electric Co., a corporation of the State of New York, is owner by assignment of the following patents which were published in the Official Gazette as available for domestic manufacturers' non-exclusive licenses on the dates indicated:

3,908,068. FIRE-RETARDING SYSTEM FOR POLYMERIC COMPOSITIONS, AND A METHOD AND PRODUCTS COMPRISING THE SAME. Published May 18, 1976.

4,022,945. ELECTRIC CONDUCTOR PRODUCT HAVING A FLAME RESISTANT INSULATION. Published June 26, 1979.

4,069,190. HEAT RESISTANT ETHYLENE-PROPYLENE RUBBER AND INSULATED CONDUCTOR PRODUCT THEREOF. Published June 26, 1979.

4,125,509. FLAME AND HEAT-RESISTANT ETHYLENE-PROPYLENE RUBBER. Published June 26, 1979.

General Electric Co. respectfully requests that these patents be removed from the register.

General Electric Co., Large Steam Turbine-Generator Division, Schenectady, N.Y., hereby withdraws the following patents from the Register of Patents Available for licensing.

3,566,010. HEAVY-DUTY INSULATING SUPPORT CONNECTOR.

3,572,968. TURBINE BUCKET COVER.

3,652,881. GENERATOR VENTILATION DOME AND COOLER CASING CONSTRUCTION.

3,693,036. LIQUID COOLED SERIES LOOP CONNECTOR.

3,808,489. COOLED FLUX SHIELD FOR GENERATOR TERMINAL BOX.

3,864,803. CARTRIDGE BRUSH HOLDER.

4,032,874. REACTOR CORE.

Status of PTO Services

The following is an update of the status of PTO services as of Nov. 5, 1982:

Service Item	FY 1983 Performance Goal (Calendar Days)	Actual	Comment
Internal Mail Processing & Delivery	4	4	
Filing Receipts:			
Patents	22	56	Increase due to increased filings in September.
Trademarks	30	49	Increase due to increased filings in September.
Patent Copies:			
Window Coupons	5	70% within 5 days 90% within 7 days	Problems encountered in the initial phase of implementing an automated control system. Improvement expect this month.
Mail Coupons*	29	95% within 29 days	
Letter Orders*	34	3% within 34 days	
Certified Copies:			
Trademark Regs.	30	19	
Applications-As-Filed	20	98% within 15 days	
File-Wrapper/Contents	N/A	79% within 15 days 93% within 30 days	
Walk-up Certification	1	99% within 1 day	Service extended to Trademarks.
Trademark Search Library:			
Filing Drawings	21	29	
Filing Reg. Certificates	3	8	
Patent Assignments	15	80	Slight increase due to high September receipts.
Trademark Assignments	21	85	Slight increase due to high September receipts.
Patent Official Gazette	Issue Date	On Schedule	
Patent Grants	Issue Date	On Schedule	
Trademark Official Gazette	Issue Date	On Schedule	
Trademark Registrations	Issue Date	On Schedule	

*Goal now includes mail processing and delivery time. A recent survey of mail delivery time for these services yielded the fact that the *average* amount of time required for one-way delivery is seven calendar days. Therefore the prior goal was increased by 14 days to reflect average time from mailing by requestors to receipt of copies.

IMPROVEMENTS TO SERVICES

- *Data Base Search System*—A contract has been awarded to Pergamon International Information Corp. (PIIC) for the provision of a data base search system in the Patent Public Search Room. Access to patent-related and non-patent information will be available to visitors in the PTO Search Room via on-line data base searches performed by PIIC. Users will be charged a fee based on the data base accessed and the connect time required to complete the search. The initial system will include the following data bases: PATSEARCH, PATCLASS, PATLAW, INPI-1, INPI-2, INPADOC, BIOSIS, CA SEARCH, COMPENDEX, NTIS, SCISEARCH, CHEMNAME, CHEMSEARCH, METADEX, RAPRA, PIRA, GEOMECHANICS, ABSTRACTS, WORLD TEXTILES, CHEMICAL ENGINEERING ABSTRACTS, and LEAD ZINC CADMIUM AND MASS SPECTROMETRY BULLETIN. Additional data bases may be made available through the search system as demand warrants.
- *Timeliness in Providing Certified Copies*—Local certification service has been extended to the certification of copies of pending and published trademark files. This service is similar to that being offered for pending, abandoned, and patented files. Individuals desiring to use the local trademark certification service are responsible for reproducing a copy of the pending or published file and placing it in the correct order. The file and the reproduced copy are to be left in the Trademark Search Library, with fee payment of $0.10 per page certified, plus $3.50 per certificate. These certification orders will be delivered to the Patent Public Search Room at 10:00 a.m. and 4:00 p.m. daily for processing. In general, the certified copy will be ready for pick-up in the Patent Public Search Room within 24 hours after received there.
- *Timeliness in Providing Patented and Trademark Files*—Based on samples taken during Sept. and Oct., the average turnaround time for providing patented and trademark files was less than 8 hours for 71% of all the requests. Almost all of the remaining requests involved files located at the Federal Records Center in Suitland, Md., and took an average of 4.5 days to process.
- *Search Room Working Conditions*—In late Oct., con-

struction was completed to expand the Trademark Search Library. Floor space in this area was increased by 450 square feet, providing space for additional tables and chairs for use by the public and for a more logical and less crowded arrangement of search files.

- *Search Room User Passes*—New Public Search Room User passes are now being issued. Users are asked to complete an application form and are given a simplified and revised set of regulations for the use of PTO facilities. There is no charge for first issuance of a new pass. Duplicate or replacement User Passes will be available for $5.00. Temporary passes will be available at no charge.
- *Patent and Trademark Copy Orders*—The contractor for the patent and trademark copy order fulfillment function has implemented and automated control system. The previous system was based on processing the order coupon and entailed a number of manual sorting and collating activities. It was highly labor intensive and error prone. The present system utilizes a small computer to eliminate many of these steps and has proven to be both cost effective and less liable to error. In place of the coupon, a label carrying significant ordering information is generated and placed on the patent copy. This label may be peeled from the copy without damage to the patent copy. The coupon number is now printed on the label, which should resolve some of the earlier problems encountered by requestors who rely heavily upon the availability of the coupon number for their own internal controls.

Nov. 9, 1982.

THERESA A. BRELSFORD,
Acting Assistant Commissioner for Administration.

PATENT NOTICES

Certificates of Correction for the Week of Nov. 30, 1982.

Re. 30,956	4,322,021	4,330,388	4,339,817
4,173,560	4,323,175	4,330,423	4,339,843
4,215,199	4,323,753	4,330,849	4,340,448
4,260,701	4,323,754	4,331,516	4,340,831
4,261,921	4,323,952	4,331,813	4,340,877
4,267,071	4,324,636	4,332,706	4,341,591
4,277,542	4,324,669	4,333,243	4,342,962
4,285,112	4,325,275	4,334,714	4,343,642
4,285,202	4,325,419	4,335,577	4,345,656
4,290,927	4,326,158	4,336,548	4,346,989
4,307,841	4,328,015	4,336,945	4,348,406
4,308,550	4,328,605	4,337,966	4,348,912
4,312,356	4,328,755	4,337,980	4,349,697
4,313,881	4,329,492	4,338,819	4,351,610
4,314,910	4,329,704	4,339,357	4,352,184
4,320,412	4,329,823	4,339,792	4,352,276

Disclaimers

3,872,309.—*Maurice Hector De Belder,* Mechelen; *Romain Henri Bollen,* Hove and *Robert Florent van Esch,* Mechelen, Belgium. RADIOGRAPHIC INTENSIFYING SCREENS. Patent dated Mar. 18, 1975. Disclaimer filed Sept. 29, 1982, by the assignee, *Agfa-Gevaert N.V.*

Hereby enters this disclaimer to all of the claims of said patent.

3,920,538.—*Karel M. A. Pronk* and *Swan T. Sie,* Amsterdam, Netherlands. DEMETALLATION WITH NICKEL VANADIUM ON SILICA IN A HYDROCARBON CONVERSION PROCESS. Patent dated Nov. 18, 1975. Disclaimer filed Oct. 4, 1982, by the assignee, *Shell Oil Co.*

Hereby enters this disclaimer to all the claims 1 to 10, inclusive of said patent.

3,925,197.—*Jakob van Klinken* and *Frits M. Dautzenberg,* Amsterdam, Netherlands. HYDRODESULFURIZATION PROCESS. Patent dated Dec. 9, 1975. Disclaimer filed Oct. 4, 1982, by the assignee, *Shell Oil Co.*

Hereby enters this disclaimer to claims 1 to 8 inclusive of said patent.

4,128,604.—*Arthur Katchman,* Delmar and *Gim F. Lee, Jr.,* Albany, N.Y. POLYPHENYLENE ETHER COMPOSITIONS. Patent dated Dec. 5, 1978. Disclaimer filed Sept. 29, 1982, by the assignee, *General Electric Co.*

Hereby enters this disclaimer to all of the claims of said patent.

4,200,639.—*Richard G. Powell,* Peoria, Ill. SESBANINE AND THE USE THEREOF IN TREATING LEUKEMIC TUMORS. Patent dated Apr. 29, 1980. Disclaimer filed Sept. 29, 1982, by the assignee, *The Unitd States of America as represented by the Secretary of Agriculture.*

Hereby enters this disclaimer to claims 1–4 of said patent.

4,289,225.—*Owen R. Scholta,* Burnsville, Minn. AIR COMPRESSOR AND DISPENSER. Patent dated Sept. 15, 1981. Disclaimer filed Sept. 27, 1982, by the assignee, *Air-Ports Systems, Inc.*

Hereby enters this disclaimer to claims 1–6 of said patent.

Dedication

4,168,623.—*Charles Edwin Thomas, Jr.,* Richmond, Va. METHOD FOR DETERMINING VOLATILE CONTENT OF A SAMPLE. Patent dated Sept. 25, 1979. Dedication filed Mar. 2, 1982, by the assignee, *Philip Morris, Inc.*

Hereby dedicates to the Public all claims and the remaining term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF October 16, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-12-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-13-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-27-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-18-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	9-08-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-02-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-24-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	2-02-80
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	10-20-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-01-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	2-06-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	8-22-80

Expiration of patents: The patents within the range of numbers indicated below expire during October 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,209,369 to 3,214,766, inclusive

Plant Patents ..... Numbers 2,558 to 2,565 inclusive

PATENT EXAMINING CORPS

REXE D. TECUMSEH, Assistant Commissioner

WILLIAM EDWARD, Deputy Assistant Commissioner

COMPOSITION OF PATENT APPLICATIONS AS OF October 16, 1821

REISSUES

NOVEMBER 30, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,090
ELECTRONIC MUSICAL INSTRUMENT

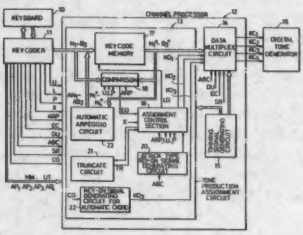
Eiichi Yamaga; Akira Nakada; Takatoshi Okumura; Eiichiro Aoki; Akiyoshi Oya, and Yasuji Uchiyama, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Original No. 4,192,211, dated Mar. 11, 1980, Ser. No. 929,007, Jul. 28, 1978. Application for reissue Dec. 31, 1980, Ser. No. 221,578

Claims priority, application Japan, Aug. 5, 1977, 52-93992; Aug. 23, 1977, 52-100966

Int. Cl.³ G10H *1/00, 5/00, 7/00*

U.S. Cl. 84—1.01 **13 Claims**



9. In a keyboard polyphonic electronic musical instrument of the type having plural tone generator channels, the number of such channels being considerably fewer than the total number of keys, the improvement comprising:

memory means storing a channel assignment table containing for each assigned channel a key code and associated key depression state data for the selected key which is assigned to that channel,

data transmission lines,

time division multiplex means for repetitively, consecutively transmitting the contained key codes and associated key depression state data via said data transmission lines during corresponding intervals in each time division multiplex cycle, and

demultiplexer means, connected to said data transmission lines and receiving said time division multiplex key codes and data, for demultiplexing the same and supplying to each tone generator channel only the demultiplexed key code and associated key depression state data for the selected key assigned to that channel.

Re. 31,091
LIGHTLY PRIZED TOBACCO

James A. Broughton, Prospect, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Original No. 3,693,629, dated Sep. 26, 1972, Ser. No. 148,967, Jun. 1, 1971. Application for reissue Jun. 11, 1981, Ser. No. 272,615

Int. Cl.³ A24B *13/00*

U.S. Cl. 131—111 **6 Claims**

1. A chewing tobacco product comprising a block of tobacco having a non-cylindrical configuration and having a tensile strength of [less than] *from about 1.0 to* 10.0 lbs. per sq. in. and an initial compression of from 2.0 to 25 lbs. per sq. in. and a final compression of from [0.5] *about 1.2* to 20 lbs. per sq. in.

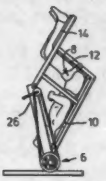
Re. 31,092
ORTHOPEDIC RECLINING CHAIR

Walter P. Sieber, Elmira, Canada, assignor to Inverchair Inc., Mississauga, Canada

Original No. 4,214,790, dated Jul. 29, 1980, Ser. No. 6,455, Jan. 25, 1979. Application for reissue Dec. 29, 1980, Ser. No. 220,990

Int. Cl.³ A47C *1/02;* **A61F** *5/00;* **A61H** *1/02*

U.S. Cl. 297—326 **6 Claims**



1. An orthopedic reclining chair comprising a seating unit having a back rest portion and a seat portion at a substantial angle to the back rest portion, a frame supporting said seating unit for movement between a substantially upright position and a traction position in which the seat portion is maintained at a substantial angle to the back rest portion and the body of a user would be substantially inverted with the torso inclined at an angle of at least 135° to the vertical, reclining mechanism acting between said seating unit and said frame for moving the seating unit between said positions, and a lap belt extending from said seat portion and [disposed to support the thighs of a user substantially parallel to said seat portion when the chair is in said traction position.] *having a thigh engaging portion wide enough to engage a substantial area of the front surface of the thighs of a user and to maintain them substantially parallel to said seat portion, whereby when the seating unit is in the traction position a major component of the weight of the head and torso of the user is suspended from the thigh bones through the hip joints, the back-rest portion being devoid of features substantially restraining the gravitational traction forces on the torso.*

Re. 31,093
PROCESS FOR MAKING ACTIVATED CARBON WITH CONTROL OF METAL ION CONCENTRATION IN PHOSPHORIC ACID

Edward D. Tolles, Charleston, S.C.; Robert L. Stallings, Cary, N.C., and Charles E. Miller, Mt. Pleasant, S.C., assignors to Westvaco Corporation, New York, N.Y.

Original No. 4,155,878, dated May 22, 1979, Ser. No. 904,696, May 10, 1978. Application for reissue Jun. 4, 1981, Ser. No. 270,371

Int. Cl.³ C01B *31/12;* **B01J** *20/20, 21/18*

U.S. Cl. 252—423 **6 Claims**

1. In a process for producing wood-base active carbon by the steps of treating a wood material with phosphoric acid at a temperature between 800° F. and 1,300° F. and recovering and recycling the phosphoric acid wherein the wood material contains one or more salts selected from the group consisting of sodium, potassium, calcium and magnesium salts and mixtures thereof, the improvement comprising maintaining the concentration in the phosphoric acid of metal ions from the group consisting of sodium, potassium, calcium and magnesium between 0.5% and 2.0% by weight of the acid.

2. The process according to claim 1 wherein the activating temperature is between 1,000° F. and 1,050° F.

4. The process according to claim 1 wherein the metal ion concentration in the phosphoric acid is maintained between [1.0% and 1.5%] *0.6% and 1.0%* .

Re. 31,094

APPARATUS FOR CONTROLLING HEATING TIME UTILIZING HUMIDITY SENSING

Tetsu Kobayashi, Nara, Japan; Takato Kanazawa, deceased, late of Nara, Japan (by Kyoko Kanayawa, administrator), and Makoto Tsuboi, Yamatokoriyama, Japan, assignors to Matsushita Electrical Industrial Co., Ltd., Osaka, Japan

Original No. 4,097,707, dated Jun. 27, 1978, Ser. No. 687,303, May 17, 1976. Application for reissue Jun. 25, 1980, Ser. No. 162,774

Claims priority, application Japan, May 20, 1975, 50-60751; May 20, 1975, 50-60752; Nov. 17, 1975, 50-138327

Int. Cl.³ H05B *6/68*

U.S. Cl. 219—10.55 B **6 Claims**

6. A heating time control apparatus for use in a microwave oven having a heating cavity, heating means for heating a food-stuff in said heating cavity, and air blowing means for blowing air into said heating cavity, said heating time control apparatus comprising:

vapor sensing means located in the path of air blown by said air blowing means for sensing a vapor generated from said food-stuff, the level of which significantly increases at a particular temperature during heating of said food-stuff,

comparison means connected to said vapor sensing means for comparing the sensed amount of vapor with a predetermined vapor level value and for generating a signal when the sensed amount of vapor reaches said predetermined level,

heat time determining means for determining the total heating time consisting of first and second heating time periods for said food-stuff, said first time period being measured from the application of power to said heating means until the signal

from said comparison means is received and said second time period corresponding to the product of a heating time coefficient and said first time period, said heating time coefficient being predetermined depending on the type of food-stuff, and

heat control means for controlling the supply of power to said heating means in response to a signal from said heating time determining means.

PLANT PATENTS

GRANTED NOVEMBER 30, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,959

CHRYSANTHEMUM PLANT

Jack M. Meek, and William E. Duffett, both of Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Sep. 4, 1980, Ser. No. 184,402
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar *Chrysanthemum morifolium,* Ramat., plant known by the cultivar name Charlie, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; daisy capitulum type, medium yellow ray floret color with minimum color oxidation; yellow green (immature) to yellow (mature) disc floret color; diameter across face of capitulum ranging from 70 to 90 mm. at maturity; uniform nine week photoperiodic flowering response to short days; tall plant height; medium peduncle length, and minimal pollen production.

4,960

CHRYSANTHEMUM PLANT

Jack M. Meek, and William E. Duffett, both of Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Jun. 18, 1980, Ser. No. 160,815
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant known by the cultivar name of Luv, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; decorative capitulum type; lavender pink ray floret color, with minimal color oxidation; diameter across face of capitulum ranging from 105 to 115 mm. at maturity; uniform eight week flowering response; short plant height; and semi-spreading branching pattern.

PATENTS

GRANTED NOV. 30, 1982

ERRATA

For CLASS	See PATENT NO.
604–099	4,361,152
256–023	4,361,400
411–277	4,361,411
524–577	4,361,506
523–173	4,361,507
523–173	4,361,508
549–292	4,361,515
528–374	4,361,678
524–850	4,361,687
373–147	4,361,716
578–014	4,361,764

PATENTS

GRANTED NOV. 30, 1982

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	No.
Abbey	4,362,123
Adams	4,362,124
Baker	4,362,125
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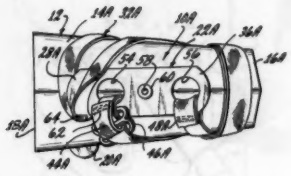
Edwards	4,362,129
Fisher	4,362,130
Gardner	4,362,131
Harris	4,362,132
Irving	4,362,133
Jackson	4,362,134
Kelly	4,362,135
Lewis	4,362,136

PATENTS

GRANTED NOVEMBER 30, 1982

GENERAL AND MECHANICAL

4,360,930
FLEXIBLE-HEADBAND ATTACHMENT FOR A FLASHLIGHT
Floyd W. Blanchard, 2231 Earl St., Los Angeles, Calif. 90039
Filed Jun. 23, 1980, Ser. No. 162,190
Int. Cl.³ A42B *1/24*
U.S. Cl. 2—209.2 **17 Claims**



1. Apparatus for connecting a headband having a minor axis, a major axis, a first end and a second end to a flashlight including a body having a major axis, a minor axis, a closed end and a lens end and a switch mounted on said body intermediate said ends, said apparatus comprising:

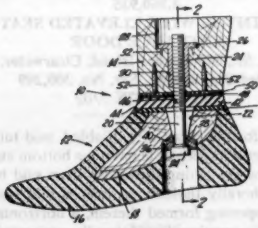
an attachment member having first and second ends;

first means for connecting said attachment member to said flashlight body;

second means for pivotably coupling one end of said headband to one end of said attachment member, whereby said one end of said headband may be rotated to selectively position the major axis of said headband parallel and normal to the major axis of said flashlight; and

third means for coupling the other end of said headband to said attachment member.

4,360,931
PROSTHETIC ANKLE
Ralph C. Hampton, 18881 Gentian Ave., Riverside, Calif. 32504
Continuation-in-part of Ser. No. 47,866, Jun. 12, 1979, abandoned. This application Apr. 15, 1981, Ser. No. 254,306
Int. Cl.³ A61F *1/04, 1/08*
U.S. Cl. 3—32 **3 Claims**



1. In combination with an ankle block forming the bottom end of a prosthetic lower leg, the said ankle block having a central threaded nut fixedly secured to the lower portion thereof with its threaded aperture opening downwardly, a foot and ankle prosthesis comprising, in combination:

a prosthetic foot having an inner keel of rigid material covered by foam elastomer molded into the form of a natural foot, said keel and elastomeric covering having an aperture formed therein extending upwardly from the bottom of the keel to the top surface of the keel, with an intermediate annular shoulder, and the top portion of the aperture being outwardly flared;

an attachment bolt passing upwardly through said aperture in the foot and screwed into said threaded nut on said ankle block, the bottom of said bolt including means to allow the bolt to move angularly and also rotationally with respect to the foot;

a pad of elastomeric material interposed between the top surface of the foot and the bottom surface of said block, said pad being of a thickness and hardness such that it can be compressed on one side or the other as the ankle block is leaned in that direction;

said elastomeric material being fixedly secured to the top surface of the foot, so that it becomes an integral part thereof;

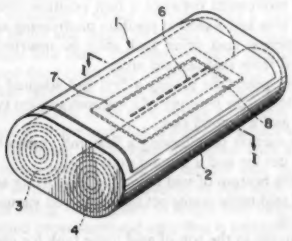
a sheet of relatively rigid, low-friction material adhered to the top surface of said elastomeric pad, said sheet having sliding contact with the surface at the bottom end of said ankle block, and said sheet having at least one arcuate slot formed therein, the center of curvature of which is located at the center of said bolt;

the circumferential length of said slot being limited to approximately the normal angular range of movement of a natural foot; and

at least one pin secured to said ankle block and projecting downwardly therefrom through said arcuate slot and into said pad of elastomeric material, said pin being movable with said ankle block to exert and maintain a torsional shear stress in the material when the ankle block is rotated with respect to the foot, whereby when the force causing relative rotation of the ankle block and foot is removed, said material under stress acts upon said pin to cause relative rotation of said block and said foot until a normal torsionally unstressed relative position therebetween is obtained;

said arcuate slot being engageble at its ends by said pin so as to limit relative rotation of the ankle block with respect to the pad of elastomeric material to a predetermined angular travel, whereby the elastomeric material is prevented from being overstressed and eventually destroyed.

4,360,932
URINATION DISPOSAL BAG
Toshiya Yoshida, 21-9 Tamagawa 1-chome, Ohta-ku, Tokyo, Japan
Filed Mar. 23, 1981, Ser. No. 246,634
Claims priority, application Japan, Jun. 19, 1980, 55-84863[U]
Int. Cl.³ A47K *11/12*
U.S. Cl. 4—144.2 **1 Claim**



1. A substantially box-shaped urination disposal bag, comprising in combination: a liquid impermeable bag body having a defined upper surface; a rectangular frame at said upper surface with a defined insertion slit within said frame; a soft

covering around said slit; a plurality of elongated rolled-up absorption bodies extending across said bag horizontally so that the longitudinal axis of said bodies is under and parallel to said slit, said bodies substantially filling up said box-shaped bag so as to give said bag the substantially rectangular box-like appearance, said bodies forming two tangent rows of substantially the same length, with the line of contact of said tangent rolls being under said slit and cooperating to form an area of near triangular cross section under said slit to accept a genital organ inserted through said slit; and, a cover disposed between said frame and said bag.

4,360,933

URINE SUCTION AND COLLECTION DEVICE FOR A VACUUM SUCTION TYPE URINATING AID

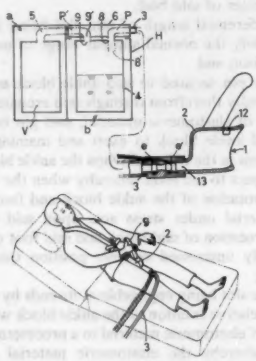
Ryusuke Kimura, Ichikawa; Shuichi Saito, Funabashi, and Kenshun Ishii, Tokyo, all of Japan, assignors to Kimura Bed Mfg. Company Limited, Tokyo, Japan

Filed Aug. 20, 1980, Ser. No. 179,878

Claims priority, application Japan, Jun. 8, 1980, 55-79773[U]; Jun. 8, 1980, 55-79774[U]; Jun. 13, 1980, 55-82621[U]

Int. Cl.³ E03D *13/00*

U.S. Cl. 4—301 **18 Claims**



1. A urine suction and collection device for use with a vacuum suction type urinating aid of the type including a urine receiver with a urine suction opening to be applied to a urinating region of a patient, said urine suction and collection device comprising:

a housing having first and second laterally spaced areas;

a suction device for generating a vacuum, said suction device being positioned in said first area of said housing;

a urine tank positioned in said second area of said housing;

a cover pivotally connected to said housing for selective pivotal movement between a first position covering said second area and a second position uncovering said second area whereat said urine tank may be inserted into and removed from said second area;

a urine transport tube having a first end adapted to be connected to a urine receiver of a vacuum suction type urinating aid and a second end;

a vacuum suction tube having a first end connected to said suction device and a second end;

means in the bottom of said cover for supporting said second ends of said urine transport tube and said vacuum suction tube; and

opening means in the top of said urine tank for communication therethrough of said second ends of said urine transport tube and said vacuum suction tube when said cover is in said first position thereof;

whereby pivotal movement of said cover between said first and second positions thereof moves said second ends of said urine transport tube and said vacuum suction tube away from said opening means.

4,360,934

SANITARY DEVICE

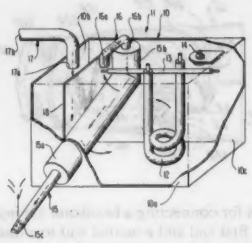
Noriakira Ishigami, Anjo; Takahisa Hasebe, Toyoake, and Takeyoshi Kaminishizono, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 14, 1981, Ser. No. 254,327

Claims priority, application Japan, Apr. 21, 1980, 55-052628

Int. Cl.³ E03D *9/08;* **A47K** *4/00, 3/02*

U.S. Cl. 4—420.2 **4 Claims**



1. A sanitary device comprising:

tank means for holding a supply of hot water,

nozzle means having inlet means at one end thereof adjacent one side of said tank and outlet means at the opposite end thereof adjacent the bottom of said tank an an opposite side thereof with said outlet means adapted to be positioned in a toilet bowl,

an inlet opening in the top of said tank adapted to be connected to a source of cold water under pressure,

an outlet opening in the top of said tank,

pipe means connecting said outlet opening to said inlet means for said nozzle means,

partition means disposed in said tank and extending downwardly from the top wall of said tank intermediate said inlet opening and said outlet opening into engagement with said nozzle means with opposite side edges of said partition disposed in engagement with two sidewalls of said tank and

heating means located in said tank on the same side of said partition as said outlet opening.

4,360,935

DEEP BATHTUB WITH ELEVATED SEAT AND ENTRANCE DOOR

John P. Barrett, Sr., 879 Harbor Island, Clearwater, Fla. 33515

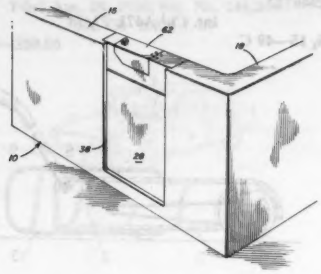
Filed Sep. 8, 1981, Ser. No. 300,289

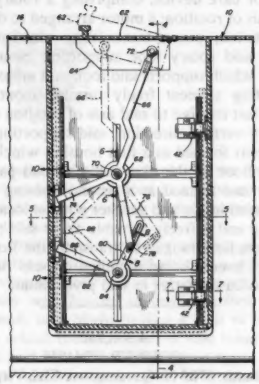
Int. Cl.³ A47K *3/02*

U.S. Cl. 4—555 **9 Claims**

1. A bathtub for the physically disabled, said tub including an upwardly opening receptacle having a bottom and upstanding wall portions projecting upwardly from said bottom and extending peripherally thereabout, one of said wall portions having a door opening formed therein, a horizontally swingable and inwardly opening door hingedly supported from said one wall portion for movement between a closed position closing said opening and an open position adjacent and opposing the inner surface of a second wall portion of said tub, said tub including means defining a seat therein facing said second wall portion and disposed to the side of said opening remote from said second wall portion, said one wall portion and said door including peripheral portions disposed about said opening and said door defining abuttingly engageable stop surfaces for limiting movement of said door toward said closed position, said one wall portion and door further including coacting seal forming portions thereof spaced inward of said stop surfaces

and engageable with each other to define a fluid-tight seal between said door and said one wall portion when said door is in the closed position, whereby the static head pressure of water within the tub and acting upon the door will assist said seal forming portions in forming said fluid-tight seal, said door and one wall portion including releasable latch structure for





latching said door in the closed position, said latch structure including a latch actuator and release shiftably supported from said door for back and forth movement between release and latching positions along a path generally paralleling the horizontal extent of said one wall portion about the periphery of said tub.

4,360,936

PIVOTING BED

Halbert J. Keller, 246 N. Main, Manti, Utah 84642

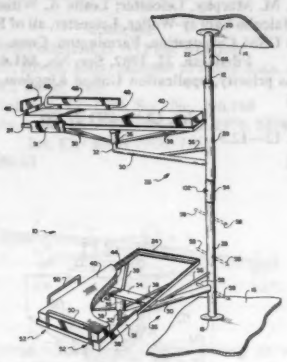
Filed Aug. 28, 1980, Ser. No. 182,024
Int. Cl.³ A47C *19/00*
U.S. Cl. 5—9 R **18 Claims**

1. A bunk bed for use inside a building structure comprising:

a single vertical post secured to said building structure;

a plurality of support arms pivotally attached to said vertical post;

a plurality of horizontal bed frames each pivotally attached to one of said support arms at the end of said support arm opposite that attached to said vertical post, each bed frame



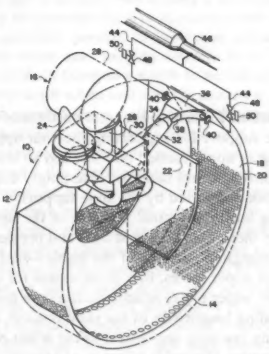
being adapted to hold a mattress unit upon a top side thereof.

4,360,937

METHOD AND APPARATUS FOR WET PROCESSING TEXTILE MATERIAL

Howard G. Putnam, Gastonia, N.C., assignor to Gaston County Dyeing Machine Company, Stanley, N.C.

Filed Feb. 13, 1981, Ser. No. 234,355
Int. Cl.³ D06B *3/26, 3/28*
U.S. Cl. 8—152 **15 Claims**



1. In apparatus for wet processing textile material in endless rope form including a vessel for containing a treating bath of processing liquid and liquid jet means for moving said endless rope through said bath, the improvement comprising a specially formed fixed cloth tube for receiving said endless rope as it leaves said liquid jet means and for delivering said endless rope to said bath, said cloth tube having a first end portion that is cylindrical in shape and that is disposed adjacent the exit of said liquid jet means and extends therefrom with a first predetermined cross-sectional area, a second end portion from which said endless rope is delivered to said bath, said second end portion being rectangular in shape and having a second predetermined cross-sectional area that is substantially greater than said first predetermined cross-sectional area whereby the endless rope will tend to be opened as it leaves said second end portion and whereby the velocity of the liquid flowing from said second end portion will be less than the corresponding velocity in said first end portion.

4,360,938

MACHINE FOR LASTING HEEL SEAT PORTIONS OF SHOES

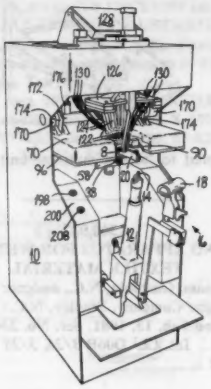
Brian J. M. Murphy, Leicester; Leslie A. Withers, Barlestone, and Malcolm Salway-Waller, Leicester, all of England, assignors to USM Corporation, Farmington, Conn.

Filed Jan. 22, 1982, Ser. No. 341,636

Claims priority, application United Kingdom, Jan. 26, 1981, 8102295

Int. Cl.³ A43D *21/00*

U.S. Cl. 12—12.5 7 Claims



1. A machine for lasting heel seat portions of shoes, comprising a shoe support for supporting, bottom uppermost, a shoe comprising an upper carried on a last and an insole held against the last bottom, a heel band for clampingly engaging the heel end of a shoe supported by the shoe support, a wiper assembly for causing lasting marginal portions of the upper, at the heel seat region thereof, to be wiped over and pressed against corresponding marginal portions of the insole—said assembly comprising two wiper plates, first drive means for effecting movement of the wiper plates relative to the shoe bottom in a direction extending lengthwise of the shoe bottom, and cam means for effecting inwiping movement of the wiper plates, as lengthwise movement thereof is effected as aforesaid—and fastener inserting means by which, while the lasting marginal portions of the upper are being pressed against corresponding marginal portions of the insole as aforesaid, fasteners can be driven, through apertures formed in the wiper plates, adjacent leading edge portions of each thereof, thus to secure said marginal portions together;

said machine also comprising second drive means for moving the heel band relative to the shoe support in a direction extending lengthwise of the shoe bottom, and control means by which the operator can set the position to which the wiper plates are moved by the first drive means (constituting a fastener inserting position), the arrangement being such that the setting by the operator of the fastener inserting position of the wiper plates is effective to cause the second drive means to operate in such a manner that the relationship between the backseam region of the heel band and a corresponding region of the wiper plates is retained.

4,360,939

FLOOR CARE DEVICE

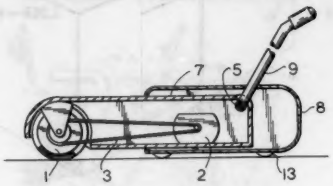
Heinz-Gerhard Krumm; Peter Wulf, both of Ennepetal, and Wieland Gühne, Remscheid, all of Fed. Rep. of Germany, assignors to Vorwerk & Co. Interholding GmbH, Wuppertal, Fed. Rep. of Germany

Filed Nov. 12, 1980, Ser. No. 205,974

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1979, 2946732

Int. Cl.³ A47L *71/18*

U.S. Cl. 15—49 C 7 Claims



1. A floor care device, comprising a rotary tool rotatable about an axis of rotation; a motor arranged to drive said rotary tool in rotation; power-transmitting element between said motor and said rotary tool; supporting means including an angle lever which supports said tool, said motor and said power-transmitting element freely turning about a pivot point which is offset relative to said axis of rotation of said tool in a substantially vertical direction, said supporting means including a first part formed as a first housing which is arranged to run over a floor or the like, and a second part forming said angle lever and formed as a second housing which has one portion located inside and another portion located outside said first housing and is freely turnable about said pivot point; and a guiding handle arranged to transport the floor care device, said guiding handle being mounted on said first housing and connected with the latter in said pivot point.

4,360,940

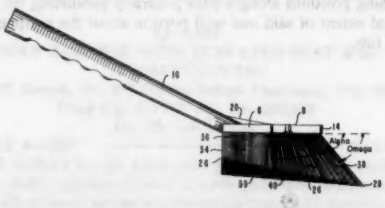
CORNER BRUSH

Louise W. Smith, 3705 N. Queensgrove Cir., Virginia Beach, Va. 23452

Filed Apr. 1, 1981, Ser. No. 249,917

Int. Cl.³ A46B *9/02*

U.S. Cl. 15—160 2 Claims



1. A corner brush assembly including a flat brush head having a tapered nose section, a plurality of bristles having a predetermined stiffness secured to one side of said brush head, said bristles not extending laterally outside the plane of said head, a first rear portion of bristles extending perpendicular to the flat head, a second portion of said bristles being angularly positioned relative to said brush head so that they extend forwardly of said nose section a predetermined distance for brushing corner areas, said bristles collectively being cut in a taper forming a wedge, the centerline of which is substantially centered with said flat brush head so that the wedge can be used to brush corner areas and a handle having a predetermined length rigidly secured to said brush head so that said

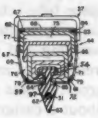
brush assembly can be used for brushing corner areas as desired.

4,360,941

ELECTRICALLY HEATED WINDSHIELD WIPER ASSEMBLY

Earl Mabie, 60 Sherwood Dr., Hooksett, N.H. 03106

Filed Apr. 28, 1980, Ser. No. 144,344
Int. Cl.³ B60S 1/04
U.S. Cl. 15—250.06 2 Claims



1. A vehicle windshield wiper assembly of the type comprising a flexible wiper blade supported in a pressure distributing flexible frame enclosed in a weather protective hood of flexible material characterized by:

said pressure distributing frame including a primary yoke with means for connecting said yoke to a wiper arm;

said hood having an inner wall, a pair of opposite side walls and an outer wall having an inside surface facing said primary yoke, said blade having a pair of longitudinal grooves in which the inner wall of said hood is received and sealed, said blade having a tapered tip;

a first pair of electrical resistance conductors extending along, and fixed to, the inner wall of said hood, each proximate one of the opposite side walls of said wiper blade;

a second pair of electrical resistance conductors, extending along and and affixed to, the outer wall of said hood, each proximate, one of the side walls thereof;

said second pair of electrical resistance conductors being mounted between said inside surface of said outer wall of said hood and said primary yoke;

said flexible wiper blade further including an electrical resistance conductor embedded within said blade proximate said tapered tip thereof;

all of said electrical resistance conductors being connected to a male electrical plug and to a built-in electrical system including a vehicle battery for heating and melting ice simultaneously from both said hood and blade areas and from said distributing frame within said hood;

an auxilliary power supply apparatus for providing electricity independent of said built-in vehicle electrical system;

said auxilliary power supply apparatus comprising a portable enclosure of dimensions suitable for normal storage within the dash compartment of said vehicle and for mounting on the cowl outside said vehicle, said enclosure having a switch, a female electric plug socket on the exterior thereof and having at least one battery and an electric circuit therein including said battery, switch, and female plug socket;

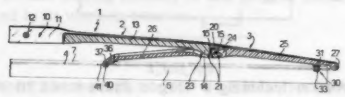
said female electric plug socket adapted to be connected with said male electric plug socket in order to provide electrical power to said electric resistance units without having to drain the electricity from said vehicle battery when the electrical energy is said vehicle battery is low.

4,360,942

WINDSHIELD WIPER BLADE

Attilio Dal Palu', Rivoli, Italy, assignor to Fister S.a.s. di Bosso Giacomo & C., Turin, Italy

Filed Nov. 12, 1980, Ser. No. 206,169
Claims priority, application Italy, Nov. 15, 1979, 53740/79[U]
Int. Cl.³ B60S 1/04, 1/38
U.S. Cl. 15—250.42 2 Claims



1. A windshield wiper construction having an armature made of relatively rigid plastic comprising a main support element adapted to be connected to an actuator arm, a pair of rocker elements, first coupling means for detachably connecting said rocker elements to the opposite ends of said main support element for rotational movement relative thereto, said rocker arms having a normal position of use in which said arms lie in generally parallel relation to said main support element and being detachable from said main support element when rotated through an angle of about 90°, an elongated lodging element mounting a flexible wiper blade, said first coupling means comprising a first body in the form of a stake having two parallel plane walls disposed perpendicularly with respect to the upper surface of said lodging element when in its normal position of use, and a second body having a slit therein terminating inwardly in a cavity of a size to receive said stake, said slit extending generally parallel to the upper surface of said lodging element when said lodging element is in its normal position of use, said slit being of a width to permit said stake to be passed therethrough when said stake is rotated to a position in which its two parallel plane walls parallel the opposite sides of said slit, the width of said slit being insufficient to permit the stake to pass therethrough when the parallel plane walls of said stake do not parallel the opposite sides of said slit, one of said bodies being connected to an end of said main support element and the other of said bodies being connected to the center portion of the rocker element, and second coupling means connecting said lodging element to each of said rocker arms for both limited axial and transverse movement of said lodging element relative to said rocker arms, said second coupling means, by reason of the limited movement of said lodging element relative thereto, permitting limited rotational movement of said rocker arms relative to said main support element but preventing rotational movement of the rocker arms to a position in which they may be detached from said main support element, whereby the wiper will not be accidentally disengaged from its actuator arm during normal use.

4,360,943

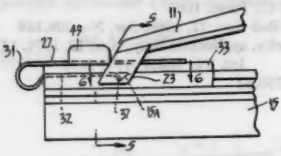
RETENTION CLIP

Robert L. Thompson, Doncaster, and Douglas E. Scotcher, Elwood, both of Australia, assignors to Nu-View Pty. Ltd., Victoria, Australia

Filed Dec. 3, 1980, Ser. No. 212,436
Int. Cl.³ B60S 1/02, 1/38
U.S. Cl. 15—250.42 10 Claims

1. A retention clip for securing a windscreen wiper blade rubber and an associated backing strip to a windscreen wiper blade superstructure and wherein said backing strip is formed with a longitudinal slot to receive a head portion of the wiper blade rubber, said clip comprising first and second portions which lie in substantially parallel planes spaced apart a distance

substantially equal to the thickness of the backing strip between an upper surface thereof and a top surface of the slot, said first portion having means for releasably securing the clip to a part of the windscreen wiper blade superstructure, and said second portion being integral with the first portion, the



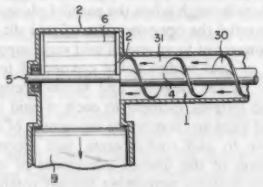
second portion including a tongue dimensioned to engage longitudinally within the said slot in the backing strip from one end thereof, the tongue being disposed between the backing strip and the head portion of the wiper blade rubber at the said one end, the tongue having means for engaging with the said wiper blade rubber in said slot.

4,360,944

TONER TRANSPORTING DEVICE FOR AN ELECTROSTATIC RECORDING APPARATUS

Fumio Iwai; Junichi Koiso; Tsugio Hirabayashi, and Hiroaki Ura, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Mar. 5, 1981, Ser. No. 240,805
Claims priority, application Japan, Mar. 6, 1980, 55-28237[U]
Int. Cl.³ G03G *21/00*
U.S. Cl. 15—256.51 **2 Claims**



1. In an electrostatic recording apparatus including a cleaning device for removing residual toner remaining on the surface of an image forming member after completion of a copying cycle, and a transport means for transporting residual toner removed by the cleaning device from the surface of the image forming member, the improvement comprising:

a chamber having an interior wall, a first opening through which residual toner removed from the surface of the image forming member is introduced into the chamber from the transport means, and a second opening through which the residual toner introduced into said chamber is moved out of said chamber in a different direction, and

at least one elastic plate mounted at one end for rotation within said chamber to move toner from said chamber through said second opening,

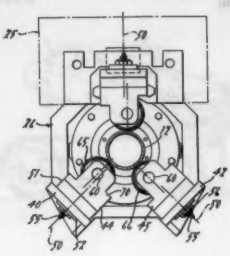
said interior wall of said chamber being so configured and positioned relative to said rotating plate that the other end of said plate remains in contact with said interior wall except at said second chamber opening.

4,360,945

ROLLER SUPPORTING MEANS FOR LONG RETRACTING SOOT BLOWERS

Dean C. Ackerman, and Charles W. Hammond, both of Lancaster, Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jul. 7, 1981, Ser. No. 281,089
Int. Cl.³ F23J *3/02*
U.S. Cl. 15—316 R **4 Claims**



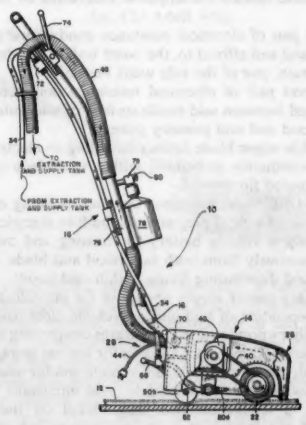
1. In a soot blower having a lance tube which is movable both axially and angularly simultaneously, a plurality of castering-type roller assemblies for journaling and positioning the lance tube with respect to a desired path of movement, each assembly comprising a roller carrier, means journaling the carrier for swinging movement about a castering axis, and a roller journaled in the carrier on a roller axis displaced laterally from the castering axis and rollably engaging the lance tube.

4,360,946

APPARATUS FOR CLEANING FLOORS AND FLOOR COVERINGS

Irl H. Marshall, Jr., Northbrook, and Paul R. Bald, Hoffman Estates, both of Ill., assignors to Duraclean International, Deerfield, Ill.

Filed Apr. 30, 1980, Ser. No. 145,345
Int. Cl.³ A47L *7/00*
U.S. Cl. 15—321 **5 Claims**



1. A floor cleaning apparatus having front and back ends and comprising:

a rotatably mounted, transversely extending brush having an axis which is substantially parallel to the floor;

means for rotating said brush;

vacuum means with a downwardly directed intake extending substantially the entire width of said brush, said intake being positioned forward of said brush;

a plurality of foam-producing nozzles positioned to the rear of said brush, each of said nozzles being adapted to generate a flat spray of foam, said nozzles positioned to spray foam toward the axis of said brush so that rotation of said brush causes the foam to be conveyed to the floor, and said nozzles aligned such that the spray from each nozzle overlaps the spray from an adjacent nozzle.

4,360,947

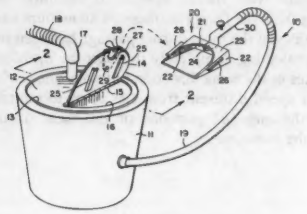
DUST COLLECTOR

Charles DeCosa, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Oct. 30, 1980, Ser. No. 202,370

Int. Cl.³ A47L *9/10*

U.S. Cl. 15—323 **2 Claims**



1. A dust collector, comprising in combination, a bucket, a cover fitted in a top opening of said bucket, an upwardly pivotable lid on said cover for closing a semi-circular hole in said cover, an upwardly extending spout on said cover for connection with a vacuum cleaner hose, and a flexible hose on a side of said bucket connnected to a scoop, whereby the inside of said scoop is in suction communication with the interior of said bucket.

4,360,948

VACUUM CLEANER NOZZLE ARRANGEMENT

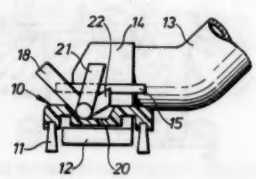
Sven B. Simonsson, Tyreso, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Oct. 23, 1980, Ser. No. 199,850

Claims priority, application Sweden, Oct. 4, 1979, 7908216

Int. Cl.³ A47L *9/06*

U.S. Cl. 15—373 **6 Claims**



1. A vacuum nozzle adapted for use on a working surface comprising two relatively movable working members consisting of a brush nozzle and a flat surface nozzle, a spring positioned between and attaching said flat surface nozzle to said brush nozzle, said spring acting to push said flat surface nozzle and said brush nozzle apart, said brush nozzle being provided with a housing, a switching means which, when moved between the two end positions thereof, alternately brings either said brush nozzle or said flat surface nozzle into contact with the working surface, a pipe piece, a suction hose which is operatively connected to said vacuum cleaner nozzle by means of said pipe piece whereby the brush nozzle surrounds said flat surface nozzle and has a substantially central aperture in its upper surface, a casing on the upper part of said flat surface nozzle projecting through said aperture, said pipe piece being pivotally mounted in said casing, and a locking member being removably mounted on the surface of said casing, said switching means being held in operating condition between said brush nozzle housing and said locking member, said switching means acting to move said flat surface nozzle against the force of said spring and cooperating with corresponding cooperating means on said locking member so that said flat surface nozzle is locked in its working position.

4,360,949

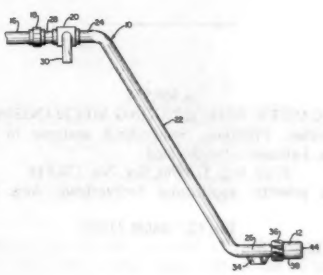
PORTABLE PNEUMATIC RAILROAD SWITCH CLEANING DEVICE

Daniel W. Wilson, P.O. Box 481, Rawlins, Wyo. 82301

Filed Jul. 14, 1980, Ser. No. 167,846

Int. Cl.³ A47L *5/14*

U.S. Cl. 15—405 **14 Claims**



1. A pneumatic cleaning device adapted to be connected to a pressurized air source for cleaning crevices and the like, comprising:

an elongated hollow body member having a first end adapted to be connected to said air source in fluid communication therewith; and

a nozzle secured to a second end of said hollow body member in fluid communication therewith, said nozzle including jet means for discharging a stream of pressurized air, said jet means including a forwardly directed central port and a pair of forwardly directed side ports, said central port and said side ports having axes oriented in a common plane with one of said said ports being on each side of said central port and being outwardly divergent from the axis of said central port, said side ports operative to lift particulate material from the surface to be cleaned and turning said material laterally of the direction corresponding to the axis of said central port.

4,360,950

CLEANER MOTOR WITH VIBRATION ISOLATION

Michael S. Miller, Millersburg, Ohio, assignor to The Hoover Company, North Canton, Ohio

Filed Feb. 26, 1981, Ser. No. 238,558

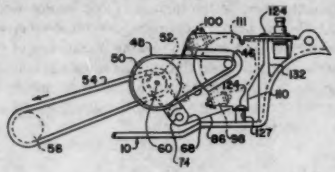
Claims priority, application United Kingdom, Nov. 28, 1980, 8038290

Int. Cl.³ A47L *9/22*

U.S. Cl. 15—412 **8 Claims**

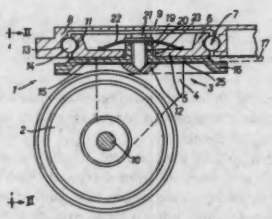
1. For use in a floor care appliance having a suction nozzle body in part enclosing a rotatable agitator, the structure including;

(a) a vibration inducing motor-fan unit for creating a flow of air into said nozzle and having a projecting shaft,
(b) a first belt trained over said shaft and extending to an intermediate pulley arrangement;
(c) a second belt trained over said intermediate pulley and driving said rotatable agitator,



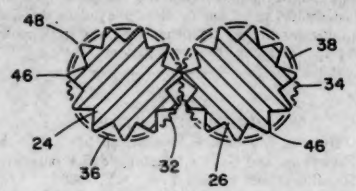
(d) a means for vibrationally isolating said motor-fan unit from said body of said cleaner mounted in compression in line with one of said belts to provide vibration isolation of said motor-fan unit from said body at the belt end of said motor-fan unit.

4,360,951
CASTER WITH BRAKING MECHANISM
Peter Bucher, Pfäffikon, Switzerland, assignor to Heinrich Bucher, Fallanden, Switzerland
Filed Aug. 1, 1980, Ser. No. 174,615
Claims priority, application Switzerland, Aug. 3, 1979, 7172/79
Int. Cl.³ B60B *33/00*
U.S. Cl. 16—35 R **5 Claims**



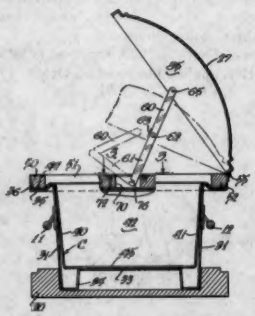
1. A brakeable caster for the chasis of a cart, chair or the like comprising a wheel member rotatably journalled in a supporting fork swivable about a substantially vertical axis, said supporting fork comprising a cross plate having a circular periphery forming the inner race of a radial/axial bearing having an outer race formed on said chasis, and a pair of depending arms to which said wheel member is journalled, said cross plate having an opening concentric with the vertical axis, a disc freely mounted over and straddling said supporting fork between said cross plate and said wheel member, said disc having a central hub freely extending through the central opening in said cross plate, spring means bearing on said hub and the surface of said cross plate, opposite said disc for normally biasing said disc out of contact with said wheel member, a brake shoe secured to said hub in opposition to said wheel member, said disc being provided with a peripheral flange offset downwardly from the central portion thereof, and a lever adapted to act on said flange for moving said disc with respect to the vertical axis to cause said brake shoe to engage said wheel member.

4,360,952
MEAT TENDERIZER
Jacob Sampson, 6138 N. Clark St., Chicago, Ill. 60660
Filed Aug. 11, 1980, Ser. No. 177,278
Int. Cl.³ A22C *5/00*
U.S. Cl. 17—45 **5 Claims**



1. A method of tenderizing meat comprising passing the meat between a pair of surfaces in spaced parallel relation having teeth with flattened ends to minimize perforations projecting from the facing surfaces by an amount to engage the opposite sides of the meat during passage between said surfaces without projecting completely through the meat, and moving the surfaces in the same direction but with one surface moving at a linear speed different from the other to stretch the meat between the engaged portions of the meat during passage between the surfaces.

4,360,953
DISPLAY AND BURIAL SYSTEM
Manfred E. Angermann, Lake Geneva, Wis., assignor to Citadel Management Services, Inc., Lake Geneva, Wis.
Filed Apr. 30, 1981, Ser. No. 259,045
Int. Cl.³ A61G *17/00*
U.S. Cl. 27—14 **7 Claims**



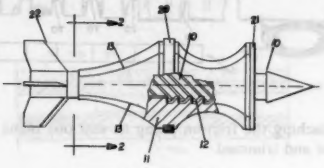
1. A display and burial system including a display base having an appearance similar to a casket base and having support means along the upper perimeter thereof, a reusable casket-like movable lid unit removably supported by said support means to enable member, a lid member pivotally mounted to said frame member for raising to a viewing position, a two-part link carried by the lid member for holding the lid member in raised position, and means operable by rotation of one part of the link for releasably connecting said one part of the link to said perimetral frame member.

4,360,954

METHOD OF MAKING CAST-IN-PLACE SABOTS

Bruce P. Burns, Churchville, and Richard D. Kirkendall, Havre de Grace, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 17, 1981, Ser. No. 235,060
Int. Cl.³ B21K *21/06*; B22D *19/00*
U.S. Cl. 29—1.23 11 Claims



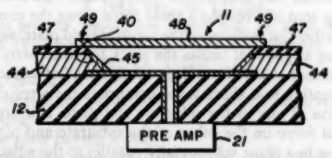
1. A method of making cast-in-place sabot for a sub-projectile which comprises the steps of:
(a) preparing a plurality of shims with a profile on one edge matching that of the profile of the sub-projectile and a profile at the other edge matching that of the inner contour of a casting split mold;
(b) coating the split mold with a release agent;
(c) assembling the shims on the sub-projectile with means designed to fix them to the sub-projectile;
(d) coating the fixing means with a release agent;
(e) applying a release agent to all shim and sub-projectile surfaces to come in contact with a subsequently cast material;
(f) placing the sub-projectile and shim assembly in the mold;
(g) fastening the mold sections together;
(h) casting the mold with a liquid that will subsequently harden, creating the sabot segments; and
(i) stripping the mold and the shim fixing means from the sub-projectile.

4,360,955

METHOD OF MAKING A CAPACITIVE FORCE TRANSDUCER

Barry Block, 30610 Page Mill Rd., Los Altos Hills, Calif. 94022

Division of Ser. No. 903,827, May 8, 1978, Pat. No. 4,225,755.
This application Apr. 21, 1980, Ser. No. 142,236
Int. Cl.³ H01G *4/00*
U.S. Cl. 29—25.42 5 Claims



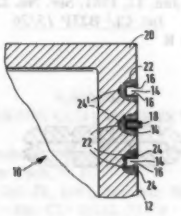
1. In a method for fabricating a batch of capacitive transducers, the step of;
forming a plurality of electrically conductive lip portions at selected locations at a first major face of a wafer to define a plurality of capacitive regions along the margins of said conductive lip portions of the wafer;
adhering in electrically insulative relation an electrically conductive deflectable electrode structure to said wafer overlaying the selected locations of said plurality of capacitive regions to define a plurality of capacitive transducer portions therebetween, said deflectable electrode structure being pivotably deflectable relative to said capacitive regions about regions of adherence of said deflectable electrode and said wafer,
dimensioning said conductive lip portions relative to the spacing from the deflectable electrode to said wafer such that the capacitance of each of said capacitive transducer portions is predominantly attributable to the mutually opposed capacitive regions in the immediate vicinity of said regions of adherence of said deflectable electrode to said wafer; and
separating said wafer with said adhered deflectable electrode structure into a plurality of capacitive transducers.

4,360,956

PISTON HAVING AT LEAST ONE PISTON RING GROOVE

Walther Hiller, Puchheim, Fed. Rep. of Germany, assignor to Steigerwald Strahltechnik GmbH, Puchheim, Fed. Rep. of Germany

Filed Aug. 7, 1979, Ser. No. 64,607
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1978, 2835332
Int. Cl.³ B23P *15/10*
U.S. Cl. 29—156.5 R 4 Claims



1. A method of forming a piston formed with a body of aluminum alloy, which after being formed has an essentially cylindrical side surface with at least one piston ring annular groove exhibiting two side walls, with at least one side wall of said piston ring annular groove formed by application of at least one additional alloy element which is alloyed with said body of aluminum alloy and hardened by an energy beam process; which comprises applying at least one band of an additional alloy element on and around said piston body in the area in which said piston ring annular groove is to be formed, simultaneously melting said additional alloy element and portion of said piston body in the area of said additional alloy element with an energy beam to alloy said additional element with said piston body portion to form an annular zone of alloyed material having a depth slightly greater than the depth of said piston ring annular groove to be formed, and forming said piston groove with at least one side wall formed by said zone of alloyed material.

4,360,957

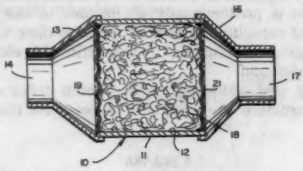
METHOD FOR FABRICATING AN EXHAUST GAS TREATING UNIT

King D. Eng, Fishkill, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Jul. 7, 1980, Ser. No. 166,418
Int. Cl.³ B23P *15/00*
U.S. Cl. 29—157 R 9 Claims

1. Method for fabricating a reactor unit having a thermally stable, reactant coated, gas permeable reactor element which includes the steps of:
initially confining a mass of a fibrous metallic reactor media within a constricting and shaping means,
depositing a hardenable layer of a base material to surfaces of the confined reactor media in sufficient amount to form a cohesive, quasi-rigid mass which will retain a configuration equivalent to the shaping means subsequent to said

layer, of base material becoming dried, and said quasi-rigid media mass being released from the confining means, removing the confining and shaping means from about the



coated fibrous mass, and applying an external layer of reactant material on to said base layer to a desired thickness thereby producing a reactor element,

installing said reactor element within a reactor casing.

4,360,958

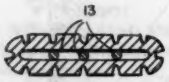
METHOD OF MAKING HEAT EXCHANGERS

Richard W. Kritzer, 400 E. Randolph, Chicago, Ill. 60601

Filed Jan. 12, 1981, Ser. No. 224,622

Int. Cl.³ B23P *15/26*

U.S. Cl. 29—157.3 R **9 Claims**



1. The method of making a multi-port heat exchange element comprising

a. forming an elongated, metal tubular member having a round cross-sectional shape,

b. flattening said tubular member throughout its length into a cross-sectional shape having

(1) a top wall and a bottom wall disposed in substantially parallel spaced relation to each other, and

(2) two side walls disposed between respective adjacent longitudinal edge portions of said top and bottom walls,

c. inserting elongated metal wires, having an outside surface having a lower melting point then said tubular member, into said tubular member in spaced relation to each other and to said side walls, and

d. adhering said outside surface of said wires to said top and bottom walls,

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4,360,959

METHOD FOR MANUFACTURING A DRUM BRAKE SHOE

Donald D. Johannesen, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jul. 29, 1981, Ser. No. 287,960

Int. Cl.³ B23P *17/00;* **F16D** *65/08;* **B21D** *22/02*

U.S. Cl. 29—417 **8 Claims**

1. A method for manufacturing a drum brake shoe having an arcuate outer surface carrying a friction lining and an inner abutment cooperating with a hydraulic actuator, comprising the steps of:

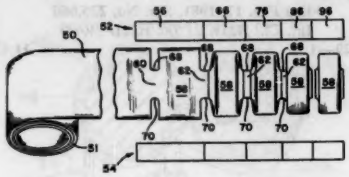
(a) providing a flat strip of material;

(b) forming a plurality of blanks on said flat strip of material, said plurality of blanks being connected to each other by links;

(c) bending said plurality of blanks to define the arcuate outer surface on each of the blanks, said bending step also forming a pair of sides for the blanks extending from the arcuate surface to the respective links;

(d) cutting one of said blanks from the remaining plurality of blanks;

(e) trimming said one blank to remove the links therefrom and also to form the inner abutment on said one blank; and



(f) attaching the friction lining to said one blank after it is bent and trimmed.

4,360,960

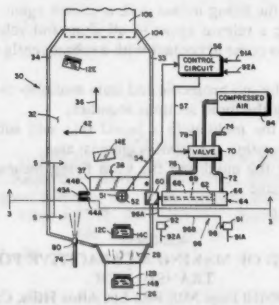
METHOD FOR SEPARATING HYBRID SUBSTRATE FROM CARRIER PLATE

Gajendra M. Patel, Fremont, Calif., assignor to GTE Automatic Laboratories, Inc., Northlake, Ill.

Filed Mar. 11, 1980, Ser. No. 129,507

Int. Cl.³ B23P *19/00*

U.S. Cl. 29—426.5 **4 Claims**



1. The method of separating a leaded hybrid substrate from a heat conductive carrier plate, the flat bottom of the substrate being contiguous with and stuck to the flat top surface of the plate by solder flux following a reflow solder operation, comprising the step of: creating a shear force along the contiguous stuck together flat surfaces of the substrate and plate, said shear force being a type that causes the stuck together parts to slide relative to each other along their contiguous flat surfaces, said step of creating said shear force comprises the steps of fixing the position of one of the substrate and plate; and creating a directional force on the other of the substrate and plate, said force being in a plane substantially parallel to the adjacent flat surfaces.

4,360,961

METHOD OF WELDING LINED PIPE

Edmund M. Chlebowski, Southbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.

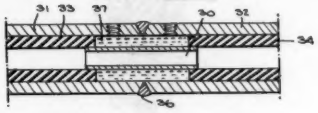
Continuation-in-part of Ser. No. 244,351, Mar. 27, 1981. This application Jun. 29, 1981, Ser. No. 277,795

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—460 **5 Claims**

1. A method of joining lined pipe comprising providing two lengths of weldable metal pipe to be joined, said pipe having a lining of heat-destructable organic polymer terminating a defi-

nite distance from the end of each pipe length to be joined, providing a removable hollow sleeve member having an outside diameter less than the inside diameter of the pipe but at least as great as the inside diameter of the lining, the length of said sleeve being slightly in excess of the combined lengths of the two unlined sections of the pipe to be joined, positioning the two pipe lengths in butting relationship with the sleeve positioned concentrically within so as to bridge the joint between the two pipe lengths and form an annular hollow casting chamber defined on the outside by the unlined inner wall of the pipe and defined on the inside by the outer wall of the sleeve



and defined at its ends by the terminus of the lining at least one unlined section of pipe being provided with a hole through its wall giving access to the said casting chamber, welding the pipe lengths together at the butt joint, the heat-destructable organic polymer lining being protected from excessive heat consequent to the welding step by the fact that the lining terminates a substantial distance from the welded joint, cooling the weld, filling the hollow casting chamber through said hole in the pipe wall with a curable organic liquid material and curing the liquid in situ to a solid polymeric state, thereafter removing said removable sleeve and plugging the said hole.

4,360,962

WIRE HARNESS

Yoshitsugu Suzuki, Mishima; Syogo Iizuka, Cotenba; Shigeo Kajiyama, Shizuoka; Kenji Usui, Gotenba, and Masahiro Kobayashi, Susono, all of Japan, assignors to Yazaki Corporation, Tokyo, Japan

Division of Ser. No. 80,682, Oct. 1, 1979. This application Jan. 8, 1981, Ser. No. 223,232

Claims priority, application Japan, Sep. 29, 1978, 53-120280; Nov. 20, 1978, 53-142212; Nov. 20, 1978, 53-142213

Int. Cl.³ H02G *1/12*

U.S. Cl. 29—564.4 **4 Claims**

1. A device for processing end portions of covered wires comprising:

a base plate having a disc;

a wire holder provided on one side of said base plate and adapted to hold at least one covered wire;

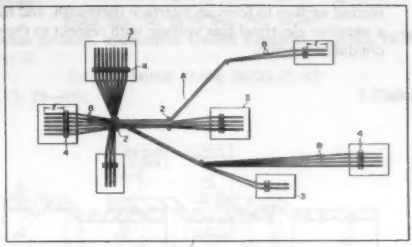
a frame provided on the base plate movably toward and away from said wire holder;

a pair of cutting edges attached to said frame above and below said wire and adapted for horizontal movement from a predetermined position along the held covered wire;

a first cam means provided on said frame for actuating said pair of cutting edges to close and open;

a drive source provided on said frame to drive said cam means;

a second cam means connected to an axle of said drive source and adapted to abut against the disc for moving said frame such that the cutting edges travel along said



covered wire from the predetermined position through a first position to a second position.

4,360,963

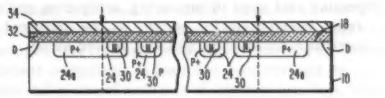
METHOD OF MAKING CCD IMAGERS WITH REDUCED DEFECTS

Lubomir L. Jastrzebski, Plainsboro, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 31, 1981, Ser. No. 288,687

Int. Cl.³ H01L *21/26*

U.S. Cl. 29—571 **8 Claims**



1. In a method of making a large scale integrated circuit device on a semiconductor wafer with said device being spaced from the outer periphery of said wafer, said method including the following sequence of steps: masking a surface of said wafer; defining openings in the mask; and forming doped regions of semiconductor material through said openings; the improvement comprising: preventing dopants from being deposited into the region of said surface adjacent said periphery.

4,360,964

NONDESTRUCTIVE TESTING OF SEMICONDUCTOR MATERIALS

Randall K. Gilly, Northampton, and David L. Rehrig, Bethlehem, both of Pa., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Mar. 4, 1981, Ser. No. 240,444

Int. Cl.³ G01R *27/02*

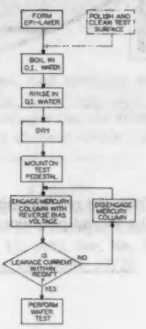
U.S. Cl. 29—574 **12 Claims**

1. A method of forming a rectifying contact at a surface of an n-type region in a semiconductor body, said rectifying

contact having a reverse bias leakage current smaller than a predetermined, desired value, comprising:

treating the surface of said n-type region with water at an elevated temperature;

engaging said treated surface with a column of mercury having a contact area of a predetermined size with said treated surface to form an interface therewith, and having a negative electrical bias voltage with respect to the semiconductor region;



measuring a leakage current associated with said negative bias voltage;

comparing said leakage current to a predetermined, desired value of said leakage current;

momentarily interrupting the engagement of the mercury column with the treated surface if the leakage current is found to exceed said desired value; and

repeating said steps of measuring, comparing and momentarily interrupting for as long as the measured leakage current is found to exceed said desired value.

4,360,965

METHOD OF MOUNTING A SEMICONDUCTOR LASER DEVICE

Kanji Fujiwara, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP79/00302, § 371 Date Aug. 1, 1980, § 102(e) Date Jul. 30, 1980, PCT Pub. No. WO80/01222, PCT Pub. Date Jun. 12, 1980

PCT Filed Nov. 28, 1979, Ser. No. 202,438

Claims priority, application Japan, Dec. 1, 1978, 53-148839

Int. Cl.³ H01L *21/18*

U.S. Cl. 29—582 **19 Claims**

1. A method of manufacturing a semiconductor laser device having a semiconductor laser element bonded to a heat sink comprising the steps of:

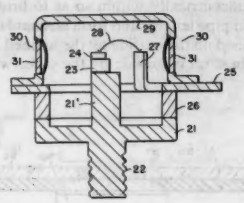
(a) forming a metallized layer on a surface of said laser element, to be bonded to said heat sink;

(b) forming a gold alloy layer on a surface of said heat sink, to be bonded to said laser element;

(c) heating said heat sink to a predetermined temperature lower than the eutectic point temperature of said gold alloy layer;

(d) contacting said metallized layer of said laser element with said gold alloy layer of said heat sink;

(e) heating said laser element and said heat sink in contact with said laser element to a temperature higher than the



eutectic point temperature of said gold alloy layer for fusing said gold alloy layer; and

(f) cooling said laser element and said heat sink in contact with said laser element to a predetermined final temperature, whereby said laser element is bonded to said heat sink.

4,360,966

Patent Not Issued For This Number

4,360,967

ASSEMBLY TOOL FOR ELECTRICAL CONNECTORS

Glenn J. Luzzi, Mount Bethel, Pa., and James E. Cole, Jr., Washington, N.J., assignors to Amerace Corporation, New York, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,780

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—758 **15 Claims**

1. A tool for use by an operator in attaching and securing a bushing assembly within an electrical connector and subsequently connecting and disconnecting the electrical connector and a terminal of an electrical apparatus from a remote location through the use of an insulated implement, such as a hot-stick, the connecting and disconnecting being accomplished through the wrenching of a threaded fastener having a wrenching configuration thereon, the tool assuring that the connection is complete so as to establish a desired electrical contact and interference fit between the electrical connector and the terminal, said tool comprising:

an elongate operating member having opposite ends;

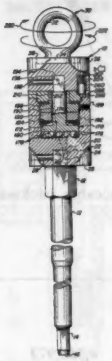
a wrenching configuration at one of the opposite ends, the wrenching configuration being complementary to the wrenching configuration of the threaded fastener for wrenching engagement therewith;

wrenching means adjacent the other of the opposite ends for direct wrenching of the operating member for attaching

and securing the bushing assembly within the electrical connector;

attachment means for selective attaching of the tool to the insulated implement; and

a torque responsive device coupling the attachment means with the other of the opposite ends of the operating member, the torque responsive device enabling rotation of the



attachment means relative to the operating member only upon exceeding a predetermined torque indicative of the appropriate seating of the electrical connector upon the terminal with the desired electrical contact and interference fit therebetween so that such relative rotation serves as an indication to the operator that the connection is complete.

4,360,968

METHOD FOR REDUCING SOLDER STICKING ON A PRINTED WIRING BOARD

John F. D'Amico, Montgomery Township, Somerset County; Michael A. DeAngelo, Jr., Ewing Township, Mercer County, and Manjini Saminathan, Plainsboro Township, Middlesex County, all of N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Jul. 27, 1981, Ser. No. 286,835

Int. Cl.³ H05K *3/34*

U.S. Cl. 29—840 **13 Claims**

1. A method for inhibiting solder sticking on a printed circuit board comprising a metallic circuit pattern on a partially uncured rubber-modified epoxy base wherein the epoxy is from 92–98% cured comprising the step of exposing said circuit board containing said circuit pattern to ultraviolet radiation of less than 3200 A. to further cure said uncured rubber-modified epoxy base thereby making it less receptive to wetting by the solder.

4,360,969

CHAIN OF ELECTRICAL CONNECTOR HOUSINGS AND A METHOD OF FITTING A HOUSING TO AN ELECTRICAL CONTACT

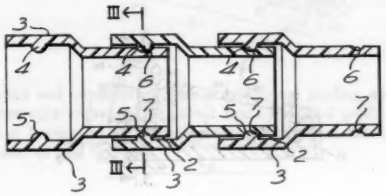
John C. Collier, York, Pa., assignor to BICC Limited, London, England

Filed Sep. 10, 1979, Ser. No. 73,861

Claims priority, application United Kingdom, Sep. 22, 1978, 37791/78

Int. Cl.³ H01R *43/04*; B65D *85/62*

U.S. Cl. 29—881 **9 Claims**



1. For use in a method of fitting an electrical connector housing to an electrical contact comprising feeding a chain of connector housings linked end-to-end in the direction of their length towards a fitting station, one end of one of each pair of adjacent housings of the chain fitting in and being releasably linked to an end of the other housing of said pair of adjacent housings, and, at said fitting station, effecting relative lengthwise movement between the housing nearest the fitting station and at the leading end of the chain and a contact in such a direction as to cause said leading housing to be fitted on to the contact, a chain of connector housings linked end-to-end in such a way that one end of one of each pair of adjacent housings of the chain fits in and is releasably linked to an end of the other housing of said pair of adjacent housings, wherein adjacent housings of the chain are releasably interlinked by interengaging means comprising at least one protuberance on a surface of one end of one of each pair of adjacent housings, which protuberance engages in a corresponding recess or recesses in a surface of an end of the other housing of said pair of adjacent housings, and wherein the interengaging means comprises an extension at one end of one of said pair of adjacent housings which engages in an aperture in an end of the other housing of said pair of adjacent housings.

4,360,970

DEVICE FOR OPENING SEALED FOOD BAGS

Richard J. Ostroski, Jackson County, Mo.; James B. Aberer, Contra Costa Coumty, Calif., and Gary Best, Jackson County, Mo., assignors to Rival Manufacturing Company, Kansas City, Mo.

Filed May 30, 1980, Ser. No. 154,784

Int. Cl.³ B67B *7/00*

U.S. Cl. 30—2 **6 Claims**

1. A device for opening a sealed food bag containing food, said device comprising:

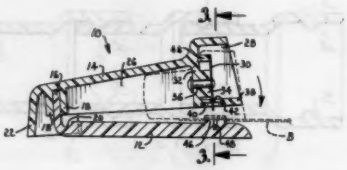
first and second arm members each having opposite first and second ends;

means for coupling said first ends of the arm members in a manner permitting the arm members to pivot toward and

away from one another, said arm members being spaced apart at said second ends thereof to provide a space of sufficient size to receive the food bag;

a cutter wheel on said second end of the first arm member mounted for free rotation thereon about an axis of rotation, said cutter wheel having a peripheral cutting edge adapted to cut through the bag and projecting into said space;

a recess in said second end of the second arm located to receive said cutting edge of the wheel therein when said



second ends of the arms are moved together to a bag cutting position, said cutting edge extending into said recess and penetrating a food bag inserted into said space when the arms are moved to the cutting position, whereby subsequent movement of the food bag relative to said cutter wheel effects cutting of the bag to open same; and

a boss on said second end of said second arm member, said boss having a surface spaced away from said cutting edge when the arm members are spread apart, said recess being formed in said surface of the boss.

4,360,971

GARDEN TRIMMER

Ruedi Fellmann, Dietlikon, Switzerland, assignor to Max Langenstein Feld- und Gartengeräte GmbH & Co., Illertissen, Fed. Rep. of Germany

Filed May 6, 1981, Ser. No. 260,929

Claims priority, application Fed. Rep. of Germany, May 13, 1980, 8012962[U]

Int. Cl.³ A01D *55/00*

U.S. Cl. 30—296 R **7 Claims**

1. A garden trimmer comprising:

a housing;

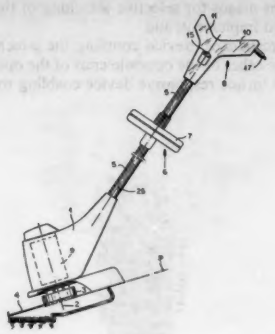
a motor in said housing having an output rotatable about a motor axis;

a cutter line attached to said output and extending radially therefrom on rotation of said output;

a shaft extending at an acute angle to said motor axis from said housing and having an outer end remote from said housing;

a Y-shaped handle having a central Y-leg fixed on said outer end and generally concentric therewith, and a pair of Y-arms each formed as a hand grip, said handle being formed generally at the intersection of said arms and leg with a throughgoing window having a rear edge directed toward said housing; and

a switch in said handle having an actuation button extending forwardly toward said housing from said rear edge of said



window and displaceable backwardly to energize said motor.

4,360,972

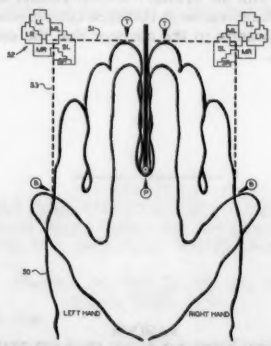
METHOD OF SELECTING ONE OF A PLURALITY OF STANDARD SIZE BURN GLOVES

John R. Montgomery, Toledo, Ohio, assignor to Jobst Institute, Inc., Toledo, Ohio

Filed Mar. 19, 1981, Ser. No. 245,590

Int. Cl.³ A41H *1/00*

U.S. Cl. 33—17 R **6 Claims**



1. A method of selecting one a plurality of standard size burn gloves comprising the steps of:

a. selecting a pair of two dimensional measurements which are correlated to hand volume;

b. dividing a population of hand volumes into a predetermined number of approximately equally populated subgroup ranges;

c. plotting two dimensional chart areas for each subgroup based upon intersections of said selected two dimensional measurements with reference to a predetermined point on the chart;

d. assigning one of the standard sizes to each chart area;

e. placing a hand on said predetermined point; and

f. plotting the intersection of the pair of two dimensional measurements for said hand to select the proper standard glove size.

4,360,973

PROBE FOR USE IN MEASURING APPARATUS

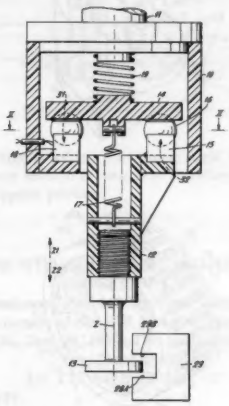
David R. McMurtry, Gloucestershire, England, assignor to Rolls Royce Limited and Renishaw Electrical Ltd., both of, Great Britain

Continuation of Ser. No. 39,786, May 17, 1979, Pat. No. 4,288,925, which is a continuation of Ser. No. 864,151, Dec. 23, 1977, abandoned. This application May 26, 1981, Ser. No. 267,068

Claims priority, application United Kingdom, Dec. 24, 1976, 54032/76; May 28, 1977, 22656/77

Int. Cl.³ G01B *7/28*

U.S. Cl. 33—174 L 9 Claims



1. A device for mounting a stylus in positioning-determining apparatus wherein said device and an object are movable relative to each other for engaging the stylus with the object thereby to sense the position thereof, said device comprising a base member having a first two-dimensional seat thereon, an intermediate member, first bias means connected to the base member and the intermediate member to urge the intermediate member into engagement with the first seat thereby to support the intermediate member on the first seat in a rest position, the intermediate member being tiltable on, and being linearly separable from, the first seat when disposed from said rest position in opposition to the first bias means, a second two-dimensional seat provided on the intermediate member and facing in a direction opposite to that in which the first seat faces, a stylus holder to which a stylus is connectable, a second bias means connected to the stylus holder and the intermediate member to urge the stylus holder into engagement with the second seat thereby to support the stylus holder on the second seat in a rest position, the stylus holder being tiltable on, and being linearly separable from, the second seat when displaced from said rest position in opposition to the second bias means, and means for providing a signal when said stylus engages the object.

4,360,974

DEVICE FOR RELATIVE POSITIONING OF TWO OBJECTS

Jean D. de Cuissart, Vitry sur Seine, France, assignor to Mecalix, France

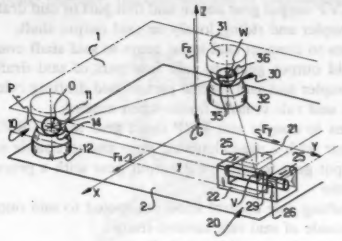
Filed Nov. 17, 1980, Ser. No. 208,832

Claims priority, application France, Nov. 26, 1979, 79 29071

Int. Cl.³ B23B *35/00*

U.S. Cl. 33—180 R 8 Claims

1. A device for the relative positioning of first and second objects through the medium of three points spaced from each other, comprising: a first ball connected with said first object and coming into contact with a corresponding hollow spherical supporting surface provided in said second object; a second ball connected with said first object and having a planar bearing surface formed thereon cooperating with a planar supporting surface provided on said second object; and at least one cylindrical supporting surface connected with said second



object and cooperating with a cylindrical guiding abutment connected with said first object, said cylindrical guiding abutment having an axis which substantially passes through the center of said first ball.

4,360,975

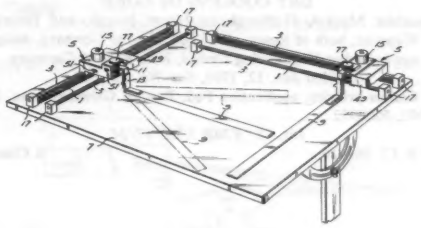
PERSPECTIVE DRAWING MACHINE

Frank R. Wurtz, 4570 Apricot Rd., Simi Valley, Calif. 93063

Filed Jan. 3, 1980, Ser. No. 109,343

Int. Cl.³ B43L *13/14*

U.S. Cl. 33—432 17 Claims



1. A mechanical perspective drawing machine comprising the combination of:

a linear gear running the length or width of a drawing table;

a follower gear riding on said linear gear to give an indication of a change from a chosen position;

a case to hold said perspective drawing machine;

means to mount said case above said linear gear and to move said case between one chosen position to another chosen position;

an input shaft connected solidly to said follower gear and running upwardly to and through bearings in the bottom of said case, through said case and into and through bearings in the top of said case;

a shaft coupler mounted solidly to said input shaft between the top of said case and the bottom of said case;

an RVP (right vanishing point) input gear below said shaft coupler and riding loosely on said shaft;

an LVP (left vanishing point) input gear above said shaft coupler and riding loosely on said shaft;

a rule control frame;

an output shaft running through a bearing in the bottom of said case upwardly through said case to and through a bearing in the top of said case continuing upward to and through a bearing in said rule control frame;

a drafting rule coupler, having a first part which is between said bottom of said case and said top of said case and a second part which is between said top of said case and said rule control frame, both parts of said drafting rule coupler being solidly connected to said output shaft;

a drafting rule connects to said drafting rule coupler by standard means;

an RVP output gear below said first part of said drafting rule coupler and riding loosly on said output shaft;

an LVP output gear above said first part of said drafting rule coupler and riding loosly on said output shaft;

means to connect said input gears to said shaft coupler and said output gears to said first part of said drafting rule coupler and said second part of said drafting rule coupler to said rule control frame when needed;

means to couple said RVP input gear to said RVP output gear with a pre-calculated ratio and to couple said LVP input gear to said LVP output gear with a precalculated ratio

a drafting rule control knob connected to said output shaft outside of said rule control frame;

means to drive said input shaft;

means to lift said drafting rule off a drawing when changing said drafting rule position; and

means to secure said shafts vertical position.

4,360,976

DRY COOLING OF COKE

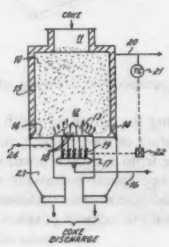
Joachim Meckel, Heiligenhaus; Horst Joseph, and Dietrich Wagener, both of Essen, all of Fed. Rep. of Germany, assignors to Didier Engineering GmbH, Fed. Rep. of Germany

Filed Jan. 12, 1981, Ser. No. 224,017

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1980, 3000992

Int. Cl.³ F26B *5/00, 17/14*

U.S. Cl. 34—20 **5 Claims**



1. In a process for the dry cooling of coke wherein hot coke is charged directly into the cooling chamber of a dry coke cooling apparatus in batches and an inert cooling gas is passed through the coke charge to thereby effect a heat exchange between the cooling gas and the hot coke whereby the hot coke is cooled by the gas passing over it and the gas is in turn heated by the hot coke and then discharged from the coke cooling apparatus, the improvement comprising the steps of providing a predetermined temperature for the gas discharged from the coke cooling apparatus, sensing the temperature of the gas discharged from the apparatus, providing a gas distributor having a plurality of gas flow chambers, and individually regulating the flow of gas into each of said gas flow chambers to control the distribution of gas introduced into the coke cooling apparatus in response to the sensed temperature of the discharged gas to maintain the temperature of the gas being discharged from the apparatus at said predetermined temperature.

4,360,977

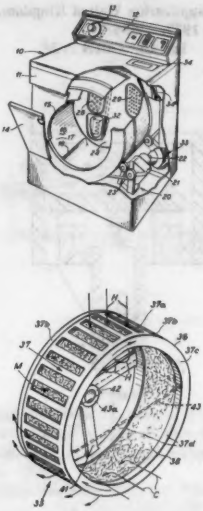
ROTATING HEAT EXCHANGER FOR A DRYER

Edwin H. Frohbieter, Lincoln Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Feb. 15, 1980, Ser. No. 121,891

Int. Cl.³ F26B *11/04*

U.S. Cl. 34—86 **18 Claims**



1. In a dryer having a drum for tumbling a clothes load and a motor-driven blower for circulating air from an air inlet through a heating means for heating said air, through said drum and to an air exhaust, a heat exchanger for exchanging heat from said heated air after passage through said drum to said air entering said air inlet, said exchanger comprising:

an annular rotatable matrix containing low density matrix material permitting radial gas flow therethrough,

drive means connected to said motor for rotating said matrix,

a splitter means stationarily mounted within said matrix for dividing said matrix into an inlet portion in air flow communication with said heating means and an outlet portion in air flow communication with said air exhaust;

an inlet air passage means for directing air from said air inlet radially through said matrix at said inlet portion to said heating means; and

outlet air passage means for directing heated air from said drum radially through said matrix at said air outlet portion to said air exhaust, whereby inlet and outlet air flows have a self-cleaning effect on said matrix material.

4,360,978

SHOE SPRING DEVICE

N. J. Simpkins, 1815 Bragg St., Chamblee, Ga. 30341

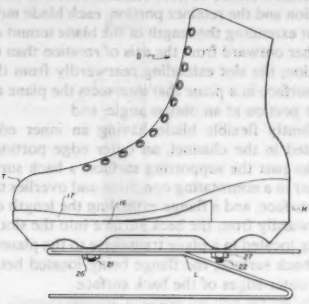
Filed Jan. 19, 1981, Ser. No. 226,523

Int. Cl.³ A43B *5/00, 3/10*

U.S. Cl. 36—114 **5 Claims**

1. A spring device for shoe such as a roller skate shoe comprising, in combination, a unitary strip of spring metal including substantially straight upper and lower portions arranged in horizontal, spaced-apart parallel relationship and a rearwardly and downwardly inclined intermediate portion between said upper and lower portions, said upper and lower portions having approximately the same length and means for detachably

mounting said upper portion to the bottom of said shoe in underlying relationship therewith with said upper and lower portions extending between the toe and heel of said shoe



wherein said strip is folded back upon itself to provide a top and bottom strip section arranged in overlapping relationship to define said upper portion.

4,360,979

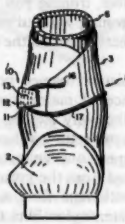
SPORT SHOE WITH A DYNAMIC ADJUSTABLE CUFF ASSEMBLY

Richard G. Spademan, Box 6410, Incline Village, Nev. 89450

Continuation-in-part of Ser. No. 886,946, Mar. 15, 1978, and Ser. No. 50,436, Jun. 20, 1979. This application Jan. 4, 1980, Ser. No. 109,611

Int. Cl.³ A43B *5/04, 11/00*

U.S. Cl. 36—121 **19 Claims**



1. A sport shoe for a lower extremity comprising:

cuff means for engaging the lower extremity; and

means responsive to relative movement of the lower extremity and coupled to said cuff means for tightening said cuff means about the lower extremity in response to a relative forward lean of the lower extremity.

4,360,980

BACKHOE ADAPTER

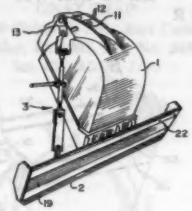
Jack D. Jarvis, Memphis, Tenn., assignor to Aluma Form, Inc., Memphis, Tenn.

Filed Sep. 24, 1980, Ser. No. 190,200

Int. Cl.³ E02F *3/76*

U.S. Cl. 37—117.5 **14 Claims**

1. An adapter for use in conjunction with a backhoe bucket having teeth and being attachable with the three point or other hitch of a tractor or the like, and useful for tamping, scraping, grading, or performing other operations upon the ground, comprising, a blade member, an inclined plate secured proximate the front of said blade member and extending upwardly at a rearward angle therefrom, side walls connecting at either side of the said blade member and plate to rigidify the adapter, the combination of said blade member and plate forming a space to accept the said bucket teeth in a wedging action to enhance their retention, adjustable link means connecting with the said adapter and embracing the bucket to assure the stable retention of the adapter with said backhoe during usage, said blade member including a pair of bosses formed therein upon the said blade member, the combination of said bosses, blade



member, and inclined plate being arranged for forming three point contact with the bucket teeth when securing the adapter with the backhoe, one of said bosses being arranged proximate the rear of the blade member and the other of said bosses being arranged proximate the front of said blade member.

4,360,981

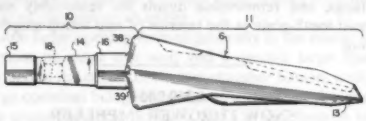
LIP AND TOOTH COMBINATION FOR BUCKET WHEEL EXCAVATOR

Stanton F. Bierwith, San Leandro, and Robert S. Bierwith, Mill Valley, both of Calif., assignors to Suncor Inc., Toronto, Canada

Filed Dec. 12, 1977, Ser. No. 859,366

Int. Cl.³ E02F *9/28*

U.S. Cl. 37—141 T **14 Claims**



1. A removable tooth system for an excavating bucket comprising:

(A) a rigid bucket lip of generally U-shaped configuration viewed head on from the work engaging side of said lip, wherein the base of the "U" is substantially straight;

(B) a plurality of transversely spaced and generally longitudinally extending sockets distributed over the base and legs of the "U" for receiving the shank portions of respective excavating teeth;

(C) a plurality of excavating teeth, one of said excavating teeth affixed in each said socket, each of said excavating teeth comprising:

(a) a socket engaging shank portion, said shank portion having forward, central, and rear sections, said forward section having generally parallel upper and lower surfaces, said rear section having generally parallel upper and lower surfaces more closely spaced than said upper and lower surfaces of said forward section, said central section having upper and lower surfaces tapering from a rear edge of said forward section to a forward edge of said rear section; and

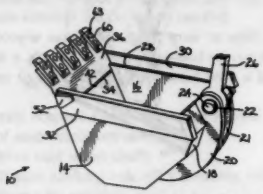
(b) a work engaging distal portion having rearwardly directed upper and lower faces joining to said forward section of said shank portion, said upper and lower faces being angularly disposed with respect to one another and to the axis of said shank portion such that said upper and lower faces meet at a line segment generally parallel to said upper and lower surfaces to said forward section of said shank portion.

4,360,982

BUCKET WITH REMOVABLE CUTTING PLATE

Herman J. Maurer, Burlington, and John F. Shumaker, Mt. Pleasant, both of Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Mar. 2, 1981, Ser. No. 239,634
Int. Cl.³ E02F 9/28
U.S. Cl. 37—141 R 11 Claims



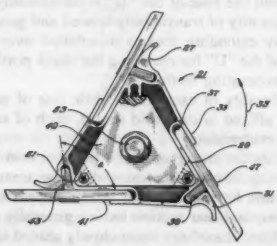
1. A bucket comprising:
(a) two transversely spaced sidewall plates;
(b) a backwall plate joining together said sidewall plates to define a scoop-shaped opening, one edge of said backwall plate being recessed relative to the leading edges of said sidewall plates;
(c) a generally flat bucket tooth-plate having two oppositely disposed beveled edges; and
(d) a cutting edge base plate carried between said sidewall plates and ahead of said one edge of said backwall, and at least two tangs defined by the leading edge of said base plate, said tooth-plate being disposed and supported on and along said tangs and adjacent the interior of said scoop-shaped opening with one of the beveled edges of said tooth-plate lying ahead of the leading edge of said tangs, and removeable means for removably mounting said tooth-plate at the interior of said scoop-shaped opening.

4,360,983

SNOW THROWER IMPELLER

Charles C. Krug, Saginaw, Tex., assignor to K & S Industries, Inc., Fort Worth, Tex.

Filed Oct. 15, 1980, Ser. No. 197,019
Int. Cl.³ E01H 5/00
U.S. Cl. 37—233 3 Claims



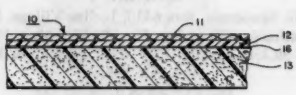
3. In a snow thrower of the type having an impeller mounted within a housing that has an intake and a chute, and power means for rotating the impeller to draw snow in through the intake and discharge the snow through the chute, the impeller comprising:
a single-piece rotor having an axis of rotation and being generally triangular in transverse cross-section, with three blade mounts formed integrally in the rotor, each blade mount having a blade supporting surface extending the length of the rotor and facing generally the direction of rotation, each supporting surface having a flat inner edge portion and an outer edge portion curved away from the direction of rotation, each blade mount having an integral retainer portion that extends over the inner edge portion to define a closed bottom channel between the inner edge portion and the retainer portion, each blade mount having a slot extending the length of the blade mount and located further outward from the axis of rotation than the retainer portion, the slot extending rearwardly from the supporting surface in a plane that intersects the plane of the inner edge portion at an obtuse angle; and
a resiliently flexible blade having an inner edge portion located in the channel, an outer edge portion that protrudes past the supporting surface, a back surface that is planar in a nonrotating condition and overlies the supporting surface, and a flange extending the length of the blade rearwardly from the back surface into the slot, the flange being located in a plane transverse to the plane containing the back surface, the flange being located between inner and outer edges of the back surface.

4,360,984

PORTABLE IRONING PAD

Reid W. Ruttenberg, 1345 Bennington Ave., Pittsburgh, Pa. 15217

Filed Jul. 27, 1981, Ser. No. 287,218
Int. Cl.³ D06F 81/14
U.S. Cl. 38—140 7 Claims



1. A portable flexible, ironing pad that can be placed on a support surface for ironing without need for an ironing board or risk of harmful effect of heat on the said surface, the said pad comprising:
a layer of heat resistant foamed polymer having an upper and lower surface of major dimension to form a pad-shaped body: adhesively bonded thereto by an irreversably hardened thermosetting adhesive a highly heat reflective moisture impervious laminate consisting of an aluminized film selected from the group consisting of a polyester film, a polyethylene film, a polyester/polyethylene film and a polyester/nylon film, the said film being in the order of 0.005 inches thick and the deposit of aluminum on the said film exceeding but being in the order of 100 micrograms per square inch; and
a cover for said laminate consisting of a fabric selected from the group consisting of a woven cotton, a synthetic fabric, and a woven fabric in part of cotton and in part of a synthetic fabric.

4,360,985

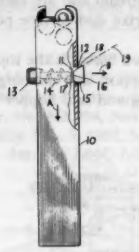
FIREARMS MAGAZINE SPEED RELEASE LATCH

David A. Pitzen, 2324 Chestnut Ct. NE., Cedar Rapids, Iowa 52402

Filed Sep. 9, 1980, Ser. No. 185,567
Int. Cl.³ F41C 25/00
U.S. Cl. 42—6 1 Claim

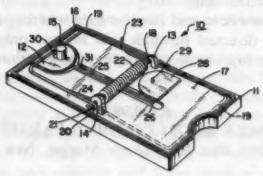
1. A mechanism for releasably retaining a box type magazine within a firearm the combination of a notch in a sidewall of said magazine and a transversely slidable magazine latch being provided with a nose portion movable into and out of retaining engagement with said notch and said nose portion normally resiliently pressed into said notch by spring action and a finger-piece extending for optional manual manipulation to retract said nose portion from said magazine notch wherein the improvement comprises said nose portion being provided with a bevelled top engaging surface to engage the top surface of said

notch and said magazine being releasable by applying downward pressure on said magazine and said nose portion being



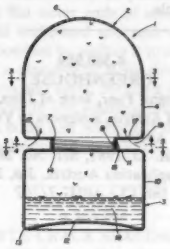
cammed to disengagement position by the action of the top surface of said notch camming the bevelled surface of said nose portion until out of engagement with said magazine notch.

4,360,986
ANIMAL TRAP
Phillip Dushey, 2220 Avenue J, Brooklyn, N.Y. 11210
Filed Nov. 28, 1980, Ser. No. 211,278
Int. Cl.³ A01M *23/30*
U.S. Cl. 43—82 **8 Claims**



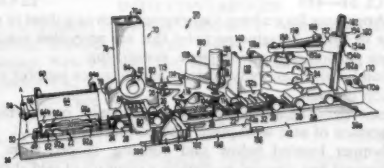
1. An animal trap comprising a frame including a platform;
a pair of transversely spaced ears secured to the platform;
a pin extending and retained in position between said ears;
a coil spring coaxial with, surrounding and being supported by said pin, said spring having an offset finger extending from one end thereof and a generally longitudinally disposed extension engaging said platform at the other end of said spring;
an animal engaging element comprising a generally U-shaped bail having a first end secured to one end of said pin, and a second end comprising a hook engaging the other end of said pin, said bail being urged against one longitudinal end of said platform by said offset finger, to maintain said bail in a tripped position;
a tab resiliently hinged to said frame at a hinge axis parallel to the center leg of said bail and adjacent the other longitudinal end of said platform for rotational movement about said hinge axis above and below said platform;
a dog mounted on said tab and having a shoulder adjacent said hinge axis for releasably engaging said bail in a set position thereof, between said dog and said hinge axis, so that said dog releases said bail when said tab is moved below said platform;
a longitudinally disposed trip lever having a major portion extending below said platform and a trip arm extending above said platform at one end of said lever, and a bail release arm affixed to said dog at the other end of said lever, so that said lever is mounted for rotation about said hinge axis, said trip arm being disposed between said pin and said one longitudinal end of said platform; and
bait retention means connected to said trip arm,
whereby deflection of said bait retention means by an animal causes said dog to release said bail from the set position thereof, whereupon said spring causes said bail arm to rapidly swing toward the tripped position thereof and to trap said animal between said bail arm and said platform.

4,360,987
GNAT TRAP
James Lowder, 6709 Oakfield, NE., East Canton, Ohio 44730
Filed Mar. 18, 1981, Ser. No. 245,198
Int. Cl.³ A01M *1/10*
U.S. Cl. 43—122 **9 Claims**



1. A gnat trap including:
(a) a bottom chamber having top, bottom and side walls, said bottom chamber being adapted to contain a quantity of liquid, the odor of which is attractive to gnats;
(b) a top chamber having top, bottom and side walls, said top chamber being mounted on and supported by the top wall of the bottom chamber with at least a portion of said bottom wall of the top chamber being spaced from the top wall of the bottom chamber;
(c) a first large opening formed generally in the center of the bottom chamber top wall and a second large opening formed in the center of the top chamber bottom wall, said large openings being in alignment with each other providing communication between said top and bottom chambers; and
(d) a plurality of small holes formed in the bottom wall of the top chamber and spaced about the large opening in said bottom wall, said small holes permitting the odor of the liquid in the bottom chamber to escape from the chambers to attract gnats into said chambers through the small holes, with said small holes being of sufficient size to permit gnats to enter the top chamber yet restrict their exiting therefrom whereupon the gnats become entrpped in said chambers and subsequently die.

4,360,988
TOY ASSEMBLY LINE FOR TOY MOTOR VEHICLE
Palmer J. Schoenfield, Evanston, and Harry Disko, South Barrington, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Jan. 14, 1981, Ser. No. 224,886
Int. Cl.³ A63H *33/30*
U.S. Cl. 46—39 **20 Claims**



1. A toy assembly line for toy motor vehicles, comprising:

a base forming an elongated assembly line for movement of said vehicle during assembly along a plurality of assembly stations;

means for moving said vehicles in a partially completed condition between said assembly stations along said lines;

an initial assembly station at one end of said line including means for positioning a chassis for a vehicle in position for movement along said line towards the next station;

a manually operable means for positioning a vehicle part on said chassis; and

a final assembly station at an opposite end of said line including means for securing the vehicle body on a vehicle chassis in position at the station to finish the assembly of a toy motor vehicle.

4,360,989

GREENHOUSE

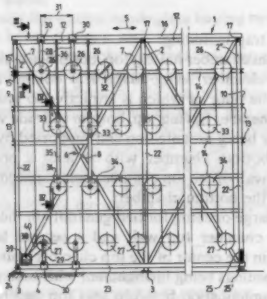
Johann Kubin; Hermann Peer, both of Linz, and Gottfried Sodeck, Vienna, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jul. 13, 1981, Ser. No. 282,818

Claims priority, application Austria, Jul. 28, 1980, 3910/80

Int. Cl.³ A01G *31/02*

U.S. Cl. 47—65 **15 Claims**



1. In a greenhouse including a cage-like supporting structure, deflection pulley means including upper and lower deflection pulleys arranged within said supporting structure, and an endless circulating belt guided about said upper and lower deflection pulleys and adapted for accommodating developing organisms, the improvement comprising longitudinal carrier means extending over the total length of said greenhouse and movably supported on said supporting structure, said deflection pulley means being arranged on said longitudinal carrier means.

4,360,990

METHOD AND APPARATUS FOR DECORATIVE ETCHING OF SURFACES

James B. Hubbard, Westlake, and Thomas E. Makus, Fairview Park, both of Ohio, assignors to Mak-Ard Industries, Incorporated, Westlake, Ohio

Filed Nov. 24, 1980, Ser. No. 209,875

Int. Cl.³ E05D *13/02*

U.S. Cl. 51—410 **12 Claims**

1. Apparatus for etching a workpiece such as a sheet of glass or the like with abrasive particles that are propelled against a surface portion of the workpiece, comprising:

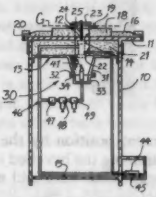
a stand with a generally horizontal workpiece support at the top thereof;

means defining an opening in said support over which a portion of said workpiece may be placed;

a hopper located below said opening, spaced from said support and adapted to contain a quantity of said abrasive particles;

fluid pressure means including a nozzle mounted in said hopper for directing a gaseous stream at relatively high velocity upwardly through said hopper toward said opening whereby abrasive particles in said hopper become entrained in said stream and are carried thereby toward said opening to strike said surface portion of said workpiece;

filter means interposed between the top of said hopper and said workpiece support and defining an open space between said opening and said hopper whereby gases may



pass therethrough outwardly from said space and said abrasive particles entrained in said gases will be filtered out;

movable shield means adapted to be selectively positioned over said opening and being movable between a retracted position and a protective operating position closely spaced above said opening; and

means responsive to said shield means whereby said gaseous stream is directed through said hopper only when said opening is in its protective operating position.

4,360,991

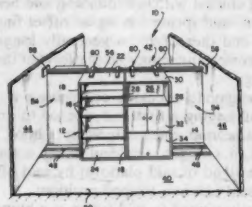
MOVABLE ROOM DIVIDING PARTITION

Evelyn M. West, Box 307, Gracie Station, New York, N.Y. 10028

Filed Sep. 9, 1980, Ser. No. 185,543

Int. Cl.³ E04B *1/34;* A47B *5/00;* B66B *9/00*

U.S. Cl. 52—29 **10 Claims**



1. A room dividing partition adapted to selectively close an opening thereby converting a large room area into smaller unit areas, the partition comprising an upright movable utility module, the movable module including a vertical panel, a pair of opposed side walls and a top wall extending perpendicular to the vertical panel, means for the storage of articles between the side walls, means facilitating guided movement of the movable module in a vertical plane across the opening, the facilitating means including wheel means mounted to the module, the movable module further including stabilizing means adapted to prevent tipping of the module in the presence of moments lying in planes transverse to the vertical plane of guided movement, the stabilizing means including elevated rail means and means securing the rail means in a plane parallel to the plane of guided movement, the stabilizing means further including gaff means interconnecting the rail means with the

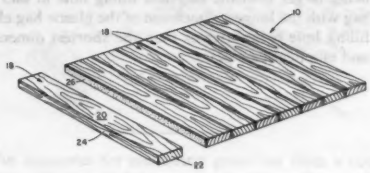
movable module, a stationary module, the stationary module having a rear vertical panel lying in a plane spaced from and parallel to the plane of guided movement, the movable module and the stationary module extending in back-to-back relationship when the partition is in its open position.

4,360,992

DIMENSIONALLY STABLE WOOD FLOORING

Vincent J. Marino, 45 West St., Beverly Farms, Mass. 01915

Continuation of Ser. No. 963,094, Nov. 22, 1978, abandoned.
This application Feb. 5, 1981, Ser. No. 231,862
Int. Cl.³ E04C 1/06
U.S. Cl. 52—309.4 **10 Claims**



1. Dimensionally stable wood flooring comprising wood fillets separated by gaps, each fillet having a width no greater than approximately two inches and each gap having a width less than one-eighth inch and larger than one-sixty fourth inch, wherein each of said fillets

A. is elongated in the direction of the wood grain;

B. has a substantially rectangular cross-section;

C. is arranged for being secured to a subfloor with an adhesive; and

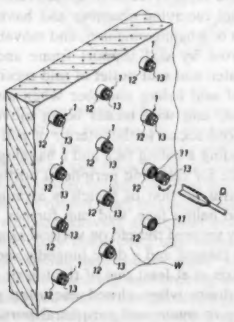
D. further characterized in that a compressible synthetic foam material fills said gaps and joins said fillets together, said foam material having flexibility, compressibility and expandability sufficient to span continuously said gaps under substantially all environmental conditions of expansion and contraction of said fillets when secured to a subfloor, and wherein said foam material is a preformed sheet adapted to fit into and fill said gaps between said fillets.

4,360,993

METHOD FOR CONSTRUCTING FLUSH WALL LATHING

Otsuki Tomokazu; Osaka Tomikazu, both of Fukui, and Otsuka Minoru, Takefu, all of Japan, assignors to Fukubi Kagaku Kogyo Kabushiki Kaisha, Fukui, Japan

Filed Mar. 27, 1980, Ser. No. 134,440
Claims priority, application Japan, Jan. 18, 1980, 55-5111
Int. Cl.³ E04B 2/30
U.S. Cl. 52—365 **2 Claims**



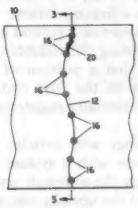
1. A method for constructing flush insulated wall lathing on a surface of a concrete wall body comprising the steps of providing a plurality of plastic sleeve members each closed at one end and having an internal screw thread, a radial flange at said closed end and a cooperating threaded bolt having a flat outer end engaging said screw thread, attaching said plastic sleeve members at predetermined spaced intervals to said wall body by fastening said closed end to said wall body so that the central axes of said sleeve members are substantially parallel by embedding at least said flange in said wall body when the concrete thereof is formed so that said flange positively retains each sleeve member in said wall body, inserting said threaded bolts into said sleeve members and adjusting them so that said flat outer ends are substantially co-planar, supporting a wallboard against said flat outer ends of said bolts, to provide a space between said wallboard and said wall body, fastening said wallboard in position by nailing it to said flat outer ends of said bolts, drilling a plurality of holes through said wallboard between said sleeves and bolts, injecting foaming plastic insulating material of low in situ foaming pressure into said space between said wall body and wallboard through said holes to substantially completely fill said space, and plugging said holes.

4,360,994

CONCRETE CRACK SEALING SYSTEM

Bonnie E. Hodges, 761 Palmer Dr., Greenville, Mich. 48838

Filed Dec. 1, 1980, Ser. No. 211,574
Int. Cl.³ E04G 23/02
U.S. Cl. 52—744 **20 Claims**



1. A method for sealing cracks in cementatious, concrete or masonry structures comprising the steps of:

applying a liquid-impermeable barrier material to a structure containing a crack over substantially the entire length of the exposed portion of the crack;

injecting a fluid, liquid latex composition through said liquid impermeable barrier into said crack at at leastone location behind the barrier so that said latex substantially fills the crack, said barrier preventing the latex from flowing out of the crack;

said fluid liquid latex composition having a low viscosity so as to penetrate into the crack interior and curable into a solid, elastomeric state; and,

curing said latex composition in place into a solid, elastomeric state.

4,360,995

INTRODUCING ELONGATED MAGNETIC ARTICLES INTO CONTAINERS

Carl H. Herman, Fleetwood; Anderson F. Johnson, Jr., Sinking Spring; Donald M. Large, Temple, and Joseph A. Tamashasky, New Philadelphia, all of Pa., assignors to Western Electric Co., Inc., New York, N.Y.

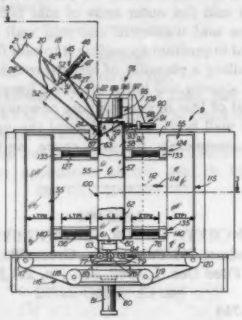
Filed Nov. 19, 1980, Ser. No. 208,450
Int. Cl.³ B65B 1/22, 35/56, 39/00, 43/59
U.S. Cl. 53—437 **27 Claims**

14. A method of introducing elongated magnetic articles into a container having a first and a second side plate spaced apart sufficiently to accommodate at least the length of an

article therebetween, a first and a second end plate, a bottom plate and, over an accessible face of the container, a normally closed cover, slidably removable from the second end, comprising:

receiving the articles within an inclined chute having first and second magnetic sidewalls such that the articles become oriented transversely therebetween, said articles advancing downwardly from an upper inlet end of said chute to a lower end, having a substantially vertically disposed outlet;

supporting a container in an upright manner extending at least to the lower end of the chute at a station for loading



articles from the chute, said container resting on the second end plate at a first elevation;

elevating the container to a second elevation at the loading station while holding the slidable cover at about the first elevation, such that a portion of the accessible face is opened adjacent to the first end, said opened portion abutting and substantially registering with the outlet from the chute; and

loading the container with articles from the chute while orienting the same with a system of magnets depending proximately from the sidewall ends of the chute along each side plate of the upright container to at least the first elevation.

4,360,996

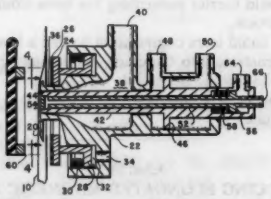
METHOD AND APPARATUS FOR FILLING AND SEALING PLASTIC BAG FLUID CONTAINERS

Christopher C. Rutter, 24174 Dover La., Hayward, Calif. 94541

Filed Aug. 13, 1980, Ser. No. 177,725

Int. Cl.³ B65B *1/18*

U.S. Cl. 53—469 **8 Claims**



5. A filling nozzle for flowing a fluid material into a plastic bag that is completely sealed except for an elliptical filling hole in one side of said bag, said nozzle comprising:

a housing having therein a fluid material chamber having an input port and outlet port, said outlet port having a circular cross-section and extending through a tubular neck of said housing;

a movable tubular valving rod extending through said fluid chamber and into said tubular neck, said valving rod having an outside diameter substantially identical with the inside diameter of said tubular neck for blocking flow from said chamber when said valving rod is moved into a first position;

a tubular vacuum stem within and coaxial with said valving rod, said stem having a solid end section for sealing the bore of said tubular stem when retracted, said stem being movable through said valving rod for extending the end section of said stem adjacent said tubular neck through said neck to open the bore of said stem; and

a substantially elliptical face plate having first and second surfaces, a portion of said second surface being connected to the end of said tubular neck and normal to the longitudinal axis thereof, the elliptical surfaces of said face plate being larger than the elliptical filling hole in said plastic bag with the longest dimension of the plastic bag elliptical filling hole being greater than the shortest dimension of said elliptical face plate.

4,360,997

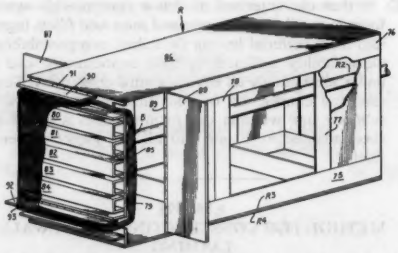
BALING APPARATUS AND METHOD

George F. Smith, Jr., Newville, Ala., assignor to Hergeth, Incorporated, Spartanburg, S.C.

Filed Sep. 11, 1980, Ser. No. 186,193

Int. Cl.³ B65B *1/24, 63/02*

U.S. Cl. 53—528 **9 Claims**



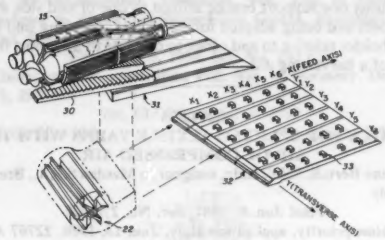
1. Baling apparatus comprising a support frame, a material collecting chamber mounted on said frame and having an inlet to receive material to be baled and having an outlet for discharging said material, a ram reciprocably movable in a horizontal plane in said collecting chamber, a platen fixedly mounted on said support frame in spaced relation to said outlet of said material receiving chamber and having a baling face forming a part of a baling chamber, and movable mounted wall means supported by said support frame and interposed between said platen and said outlet of said receiving chamber to form a part of said baling chamber when disposed in closed baling position, said wall means being movable to an open position to afford access to the interior of said baling chamber, said ram including a baling face and a bagging cavity adjacent said baling face for retaining peripheral portions of a bagging sheet the central portion of which is arranged in overlying relation to said baling face, said ram further having a pair of doors hingedly secured thereto on vertical axes respectively on opposite sides thereof and a door hingedly secured thereto on a horizontal axis at at least one of the top or bottom portions thereof, said doors when closed enclosing portions of said bagging cavity to retain said peripheral portions of said bagging sheet within said bagging cavity during formation of a bale.

4,360,998

ABSOLUTE GRAIN LOSS MONITOR

Richard K. Somes, Berlin, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 27, 1981, Ser. No. 248,618
Int. Cl.[3] A01D *45/00, 75/00*
U.S. Cl. 56—10.2 8 Claims



1. An apparatus for measuring grain lost from a combine harvester which includes a sieve wherethrough grain is collected comprising:

sensor means disposed in rows corresponding to sectional areas of said sieve for providing signals representative of grain volume distribution through each sectional area;

means responsive to said signals provided by said sensor means for computing grain volume passed rearward of said sieve during a predetermined time interval; and

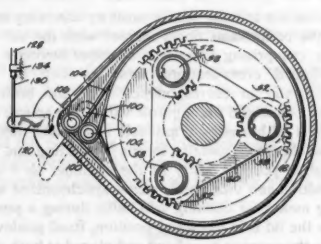
means responsive to signals from said computing means for providing signals when said grain volume passed rearward during said predetermined time interval exceeds an established threshold.

4,360,999

LAWN MOWER INCLUDING PLANETARY CLUTCH/BRAKE

Carl E. Seyerle, Abingdon, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Apr. 9, 1981, Ser. No. 252,274
Int. Cl.[3] A01D *69/10*
U.S. Cl. 56—11.3 18 Claims



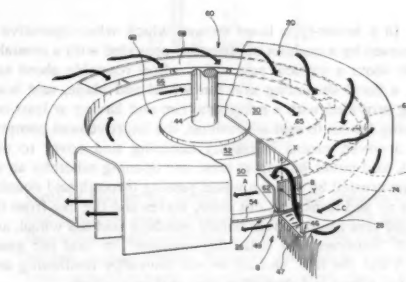
1. A lawn mower comprising a blade housing, wheel means for supporting said blade housing for movement along the ground, a rotary cutting blade supported in said blade housing, a prime mover carried by said blade housing, said prime mover including a rotatably driven input shaft, said input shaft having a longitudinal axis, an output shaft drivingly connected to said cutter blade for rotatably driving said cutter blade, and means for alternately drivingly connecting said input shaft to said output shaft and braking said output shaft, said means for alternately drivingly connecting and braking including a sun gear driven by said input shaft, a first planetary gear in enmeshing relation with said sun gear and supported for rotation around said input shaft and for rotation about an axis parallel to said longitudinal axis, a ring gear surrounding said sun gear and said first planetary gear and in enmeshing relation with said first planetary gear, a second planetary gear drivingly connected to said first planetary gear, and rotationally driven by said first planetary gear, a second sun gear connected to said output shaft for driving said output shaft, said second sun gear being in enmeshing relation with said second planetary gear, and means for alternately braking rotation of said ring gear and said output shaft.

4,361,000

BAGGING FILAMENT MOWER

Nathan J. Friberg, Shakopee, Minn., assignor to The Toro Company, Minneapolis, Minn.

Filed Jun. 1, 1981, Ser. No. 269,151
Int. Cl.[3] A01D *53/04*
U.S. Cl. 56—13.4 13 Claims



1. An improved lawn mower for cutting ground growing vegetation, which comprises:

(a) a housing having a downwardly facing cutting chamber, wherein the cutting chamber has a lower edge and is substantially enclosed except for being open at its bottom such that air is drawn into the cutting chamber substantially only through its bottom;

(b) means for supporting the housing for movement over a ground surface;

(c) a flexible line cutting element having a free end portion contained in the cutting chamber which portion traverses over a cutting area of the chamber to sever the vegetation;

(d) means for rotating the free end portion of the cutting element; and

(e) means for inducing a generally upward airflow in at least a portion of the cutting area traversed by the free end portion of the cutting element to stand the vegetation up for better cutting, wherein the inducing means comprises a fan located in the cutting chamber and having means for preventing the operator from interposing a body member into the fan during normal operation of the lawn mower, wherein the fan comprises:

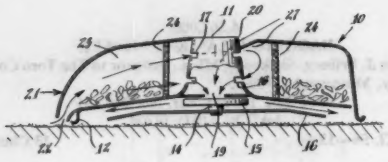
(i) at least one rotatable fan blade; and

(ii) a shroud for enclosing the fan blade, wherein the shroud is substantially enclosed except for air ingress means for feeding air to the fan blade and air egress means for discharging air from the shroud, and wherein the shroud is located above the lower edge of the cutting chamber such that the air drawn through the bottom of the cutting chamber has to move vertically upwardly to enter the air ingress means thereby forming the upward airflow in the cutting chamber.

4,361,001
COLLECTING ACCESSORY FOR AIR SUPPORTED LAWN MOWER

David R. Almond, 190 JB Dekeyser Straat, 1970 Wezenbeek-Oppem, Brussels, Belgium; David Baggett, Toft Gate Farm, Barnopfield, Newcastle-upon-Tyne NE16 6AG, and Colin Turner, 59 Barley Mill Rd., Bridgehill, Consett, Co. Durham DH8 8JS, both of England

Filed Apr. 14, 1981, Ser. No. 254,146
Claims priority, application European Pat. Off., Apr. 15, 1980, 80/850053.2
Int. Cl.³ A01D *53/00*
U.S. Cl. 56—12.8 7 Claims

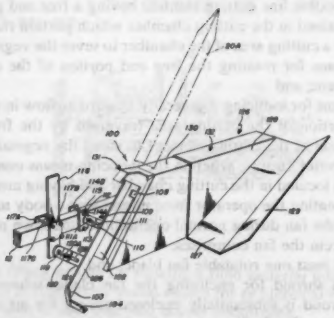


1. In a hover-type lawn mower which when operative is supported by a cushion of air and is provided with a rotatable blade about a vertical axis, a fan wheel rotatable about said axis, a hood shrouding said fan wheel and blade, said hood being provided with a peripheral rim and having at least one opening for air to said air cushion, the improvement comprising: a cover, means releasably fastening said cover to said hood, said cover having at least one opening whereby an air stream created by said fan wheel passing through said opening picks up and transports cut grass, leaves and the like from the ground area to said cover before reaching said fan wheel, and which functions as a collecting chamber for said cut grass, leaves and the like, said air stream thereafter continuing into said fan wheel and thereafter into said air cushion.

4,361,002
STICK HOLDER AND DEPOSITION DEVICE

Larry D. Swetnam; James H. Casada, and Linus R. Walton, all of Lexington, Ky., assignors to The University of Kentucky Research Foundation, Lexington, Ky.

Filed Apr. 2, 1981, Ser. No. 250,222
Int. Cl.³ A01D *45/16*
U.S. Cl. 56—27.5 9 Claims

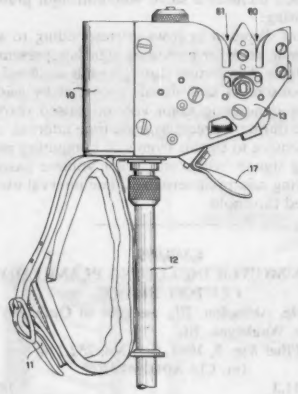


1. A stick holder for use with a harvesting aid comprising:
a bottom stick engaging member;
side members affixed to and projecting upwardly from said bottom stick engaging member for retaining a stick therebetween;
an abutting surface disposed adjacent to an end of said bottom stick engaging member for retaining an end of a stick disposed therein;
a discharge chute comprised of an angled, downwardly inclined member positioned adjacent to said abutting surface to guide a stick manually disengaged from said side members as the stick is discharged from said stick holder and falls under the influence of gravity onto the ground surface; and
at least one support bracke affixed to one of said side members and being adapted for adjustably mounting said stick holder relative to and offset to one side of a support frame of a harvesting aid.

4,361,003
DEVICE FOR SPLICING TEXTILE YARNS WITH THE AID OF COMPRESSED AIR

Luciano Bertoli, Salo', Italy, assignor to Mesdan S.p.A., Brescia, Italy

Filed Jun. 9, 1981, Ser. No. 272,028
Claims priority, application Italy, Jun. 13, 1980, 22767 A/80
Int. Cl.³ B65H *69/06;* D02J *1/08*
U.S. Cl. 57—22 10 Claims



1. A device for splicing textile yarns by admixing and intermingling the component fibers thereof with the aid of compressed air, comprising a blending chamber having a substantially V-shaped cross-sectional outline, with an opening formed centrally in correspodence with the bottom wall thereof and connected via a cutoff valve to a source of compressed air, a lid borne by a movable supporting member for closing said chamber frontally, means for shifting said lid from an inoperative position away of the chamber to a chamber closing position and vice versa, means synchronized with said lid-shifting means for opening said valve during a preselected time when the lid is in its closed position, fixed guideways for positioning the yarns to be spliced and placed at both sides and away of the blending chamber, members comprised of fixed and movable portions for clamping the yarns and severing means comprised of fixed and movable scissors blades for severing the free tails of the yarns on the opposite side as referred to the chamber and relative to the clamping side, the movable portions of the clamping members and the movable scissors blades of the severing members being controllable in synchronization with the movement of said lid from its inoperative position to the position of closure of the blending chamber, the device being characterized in that the fixed portions of the clamping members and the severing members, respectively, on the two sides of the blending chamber are mutually confronting, that the fixed portions of the clamping members are arranged in an advanced position relative to the direction of motion of the lid from its inoperative position to its closure

position, with reference to the blending chamber and also relative to the severing member, and that the supporting members for the lid carries in an adjustable position actuating means for the movable scissors blades.

4,361,004

BEARING SUPPORT FOR BOBBIN-SPINDLE DRIVE

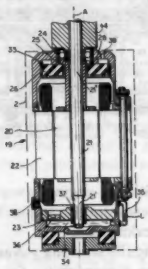
Max Hartmannsgruber, Kirchheim, Fed. Rep. of Germany, assignor to Zinser Textilmaschinen GmbH, Ebersbach/Fils, Fed. Rep. of Germany

Filed Dec. 5, 1980, Ser. No. 213,624

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1979, 2950394

Int. Cl.³ D01H *1/244, 7/08*

U.S. Cl. 57—100 5 Claims



1. A bobbin drive comprising:

a housing having an upper wall and a lower wall;

a motor in said housing provided with a rotor between an upper shaft portion projecting upwardly through said upper wall and a lower shaft portion projecting downwardly toward said lower wall;

a bobbin-support spindle fixed on said upper shaft portion above said upper wall;

a journal rotationally supporting said lower shaft portion adjacent said lower wall;

an oil sump adjacent said journal containing a lower body of oil in which said journal is at least partially submerged;

an upper bearing rotationally supporting said upper shaft portion in said upper wall, said upper bearing including an outer race and an inner race separated by rotary bodies in an intervening annular gap; and

an oil reservoir directly underneath said upper bearing containing an oil-saturated felt ring and communicating through a substantially vertical passage with said gap for conducting oil from said felt ring to said upper bearing, said felt ring lying just below said passage and extending radially beyond said outer race within said reservoir under a portion of said upper wall provided with a fill hole.

4,361,005

ASSEMBLY FOR WINDING UP TEXTILE FILAMENTS

Hans-Peter Weeger, Hattenofen, and Heinrich Herdtle, Ebersbach-Büchenbronn, both of Fed. Rep. of Germany, assignors to Zinser Textilmaschinen GmbH, Ebersbach, Fed. Rep. of Germany

Filed Feb. 3, 1981, Ser. No. 231,142

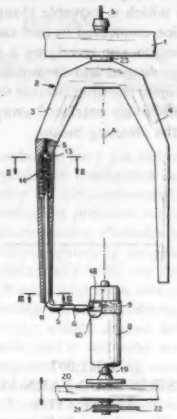
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1980, 3004165

Int. Cl.³ D01H *7/32, 7/28*

U.S. Cl. 57—117 6 Claims

1. In a machine for winding up textile filaments, comprising a frame with flyers journaled thereon for rotation about generally vertical axes of respective spindles that are rotatably carried on a support vertically movable relatively to said frame, each of said flyers having depending wings provided with a presser foot having a free end for the guidance of filaments to be pressed thereby against a peripheral surface of a rotating bobbin which is carried on the respective spindle and on which such filaments are to be wound,

the improvement wherein said presser foot is swivelably mounted on a lower extremity of said wing and is provided with spring means urging the free end thereof toward the respective spindle axis, said extremity and said presser foot being provided with coacting formations limiting an inward swing of said presser foot under the



force of said spring means to a minimum distance of said free end from said spindle axis which is slightly less than the radius of said peripheral surface, said free end and said bobbin having surface portions cammingly engageable with each other upon a rise of said support relative to said frame with said free end located at said minimum distance from said spindle axis whereby said presser foot is swung outward to let said free end come to rest against the peripheral surface of said bobbin.

4,361,006

SPINNING FRAME

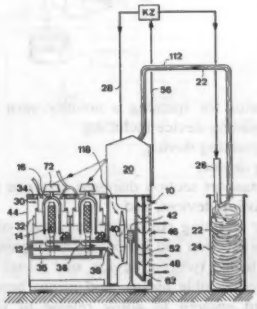
Hermann Gasser, Zürich; Karl Curiger, Pfäffikon, and Peter Novak, Winterthur, all of Switzerland, assignors to Luwa AG, Zürich, Switzerland

Filed Jun. 30, 1980, Ser. No. 164,068

Claims priority, application Switzerland, Jul. 6, 1979, 6333/79

Int. Cl.³ D01H *11/00*

U.S. Cl. 57—304 6 Claims



1. A spinning frame containing spindles and comprising:

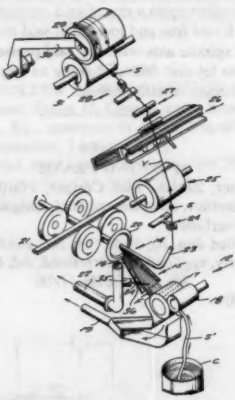
a frame mount;
a ventilating fan arranged in cooperating relationship with respect to said frame mount and the spindles of the spinning frame;
said ventilating fan having a suction side and a pressure side;
a filter located at the pressure side of said ventilating fan;
said filter forming at least part of a rear wall of said frame mount;
pneumatic cleaning means provided for said filter;
said pneumatic cleaning means comprising:
a suction arm which is movable along said filter; and
a suction device connected to said suction arm; and
said movable suction arm overlying a portion of the filter which is being cleaned and diminishing the action of the ventilator fan upon the filter, so that waste deposited upon said filter is effectively entrained away from said filter by the action of the cleaning means.

4,361,007

OPEN END SPUN SLUB YARN METHOD AND APPARATUS

John H. Sumner, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Mar. 5, 1980, Ser. No. 127,446
Int. Cl.³ D01H *1/12, 7/882, 7/892;* D02G *3/34*
U.S. Cl. 57—409 **8 Claims**



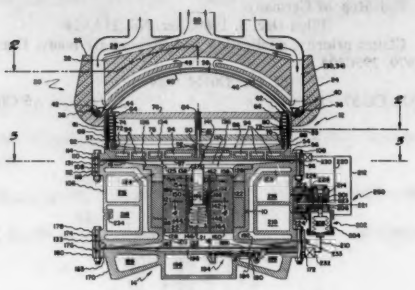
1. Apparatus for spinning a novelty yarn comprising an open-end spinning device including
a fiber separating device,
a twisting device,
a fiber transport section disposed between said separating and twisting devices, and
means for effecting controlled formation of effects in the transport section and for occasionally passing the formed effects to the twisting device, said means comprising an elongated flexible means, said means bending an extent sufficient enough to allow release of fibers collected thereby whenever the buildup of fibers thereon is greater than a predetermined amount.

4,361,008

STIRLING ENGINE COMPRESSOR WITH COMPRESSOR AND ENGINE WORKING FLUID EQUALIZATION

John J. Dineen, Durham, N.C., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Jul. 25, 1980, Ser. No. 172,371
Int. Cl.³ F02G *1/06*
U.S. Cl. 60—521 **5 Claims**



1. A free-piston Stirling engine/compressor, comprising:
a hermetic vessel enclosing an engine working space adapted to contain a working gas;
a heater for heating the working gas and a cooler for cooling the working gas; a regenerator for extracting and storing heat from the working gas as it flows in one direction, and returning the heat to the working gas as it flows in the other direction;
a displacer reciprocally mounted in said working space to displace a working gas between said heater and said cooler through said regenerator to create a pressure wave in said working gas;
a compressor space;
a sealed hydraulic chamber in said vessel closed at one end by an engine diaphragm which is exposed to said pressure wave and closed at the opposite end by a compression diaphragm which is disposed adjacent said compression space;
a power piston reciprocally mounted within said hydraulic chamber so as to divide said chamber into two volumes, one of which volume is defined by one face of said power piston and said engine diaphragm and the other volume being defined by the opposite face of said power piston and said compression diaphragm;
an inlet valve and an exhaust valve communicating between said compression space and a suction plenum and an exhaust plenum, respectively;
control means communicating with said compression space and said working space for adjusting the mean pressure in said working space to maintain a predetermined proportional relationship between the mean pressure in said compression space and the mean pressure in said working space.

4,361,009

MOVING BED HEAT STORAGE AND RECOVERY SYSTEM

Donald C. Schluderberg, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Oct. 31, 1979, Ser. No. 89,824
Int. Cl.³ F01K *3/00*
U.S. Cl. 60—659 **4 Claims**

1. A heat storage and recovery system for storing excess over demand energy generated by a steam cycle electrical generating plant during slack electricity demand periods and

for recovering the stored energy to provide supplemental electricity during peak electricity demand periods comprising:

moving bed heat exchanger means for exchanging heat between said system and the generating plant wherein said moving bed heat exchanger means comprises:

an inlet header having an inlet tube sheet;

an outlet header having an outlet tube sheet;

said inlet header having at least one inlet for admitting fluid to said heat exchanger;

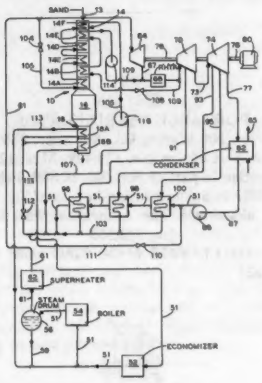
said outlet header having at least one outlet for discharging fluid from said heat exchanger;

a plurality of tube banks each extending generally horizontally from said inlet tube sheet to said outlet tube sheet to establish fluid communication therethrough between said inlet header and said outlet header;

a shell encasing said plurality of tubes and being open at the top and the bottom;

said inlet header and said outlet header each having a plurality of diaphrams dividing said headers into a plurality of compartments;

said plurality of diaphrams including a number of section diaphrams being positioned in said headers between a corresponding number of same pairs of tube banks to divide the heat exchanger into a corresponding number of sections, and further including a number of subsection diaphrams being positioned in said headers between



every other pair of tube banks and staggered as between headers such that each of said compartments is in fluid communication with the inlet and the outlet of its section;

said tube banks having a plurality of tubes being on a triangular pitched array and spread by a number of rings circumscribing said tubes; and

a plurality of orifaced plates extending below each of said tube banks to support said tube banks and to retard the flow of sand therethrough over said tubes to provide an even sand flow velocity through the shell side of said heat exchanger and to provide a high sand bed density in contact with the entire periphery of each tube;

conduit means for establishing fluid communication between the steam cycle and said moving bed heat exchanger means;

valve means for selectively opening and closing said conduit means to selectively admit fluid from different points in the steam cycle to said moving bed heat exchanger means;

a bed of refractory particles of suitable size for flowing through said moving bed heat exchanger means;

storage means for storing said bed of refractory particles; and,

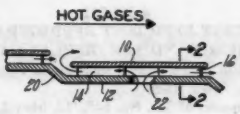
transport means for transporting said refractory particles between said storage means and said moving bed heat exchanger means.

4,361,010

COMBUSTOR LINER CONSTRUCTION

Ibrahim S. Tanrikut, Manchester; Walter B. Wagner, Bolton; Irwin Segalman, Bloomfield, and Perry Goldberg, West Hartford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 2, 1980, Ser. No. 136,848
Int. Cl.³ F23R 3/42
U.S. Cl. 60—757 **5 Claims**



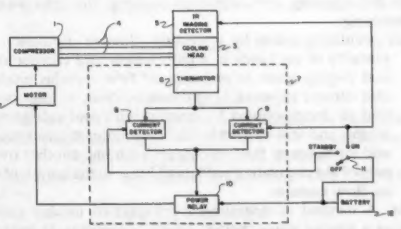
1. A liner for a combustor for a gas turbine engine comprising an outer wall generally configured in the shape of the combustor, a plurality of circumferentially mounted inner walls facing the combustion products radially disposed from said outer wall, interconnecting elements between said inner and outer walls defining generally longitudinal open ended channels aligned substantially with the flow of combustion products in the combustor, said inner and outer walls and the included interconnecting elements defining a liner segment, and each segment being axially spaced defining a transition zone, opening means formed in said outer wall intermediate the ends of each liner segment for leading compressor cooler air from the space surrounding said liner admitting air internally of said open ended channels so that a portion of the cooler air flows counter to and the remaining portion flow in the direction of the combustion products, the cooler air discharging in the upstream end of the open ended panels merging with the flow of cooler air discharging from the downstream end of the open ended channels of the next adjacent upstream segment, the flow of cooler air in said channels convectively cooling said liner walls and the flow of cooler air discharging from said open ended channels film cooling the outer wall at said transition zone and then the inner wall by flowing along the outside surface thereof.

4,361,011

CRYOGENIC COOLING SYSTEM

Robert E. Callender, Woodbridge, Va., and James T. Montgomery, Wheaton, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 9, 1981, Ser. No. 300,533
Int. Cl.³ F25B 21/02
U.S. Cl. 62—3 **3 Claims**



1. A cryogenic cooling system including an electrically-powered cooling head means, a temperature sensor for said cooling head, a battery for powering said means, the improvement comprising:

a control means between said battery and said cooling head means, said control means including:

means, responsive to said temperature sensor for controlling

said battery to said cooling head means until a first predetermined temperature of said cooling head is reached;

means, responsive to manual control and to said temperature sensor, for connecting said battery to said cooling head means until a second predetermined temperature of said cooling head means is reached, whereby said second temperature is lower than the first and whereby first temperature is maintained until the last-mentioned means responsive is operated.

4,361,012

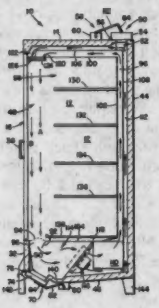
ENERGY EFFICIENT REFRIGERATED MERCHANDISER DISPLAY CASE

Fayez F. Ibrahim, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Continuation-in-part of Ser. No. 145,712, May 1, 1980, Pat. No. 4,325,227, which is a continuation-in-part of Ser. No. 141,359, Apr. 18, 1980, and Ser. No. 141,360, Apr. 18, 1980, which is a continuation-in-part of Ser. No. 101,069, Dec. 7, 1979, Pat. No. 4,265,090, which is a continuation-in-part of Ser. No. 58,916, Jul. 19, 1979, Pat. No. 4,242,882, which is a continuation-in-part of Ser. No. 25,473, Mar. 30, 1979, Pat. No. 4,245,482. This application Sep. 4, 1980, Ser. No. 184,033

Int. Cl.³ F25D *21/12;* A47F *3/04*

U.S. Cl. 62—82 **36 Claims**



1. In a display cabinet having refrigeration means and a display space therein, aperture means in at least one wall of said cabinet for communicating ambient outside air with the air in said cabinet, said aperture means including an access opening for permitting products to be moved into and out of said display space, covering means for said aperture means including at least one barrier door for substantially covering said access opening; said aperture means including at least one additional opening and said covering means having at least one gate for covering said additional opening; the improvement comprising:

air circulation means for providing selective circulation of a plurality of air bands in a path within said cabinet about said display space to maintain air flow curtains inside of said cabinet adjacent to said barrier door, at least one of said air bands cooled by contact with said refrigeration means; and said cabinet including conduit means enabling said air bands to flow in contact with one another over a part of the circulation path in addition to the length of said air flow curtains.

34. A method of operating a refrigerated display cabinet having a display space therein, aperture means in at least one wall of the cabinet for communicating ambient outside air with the air in the cabinet, the aperture means including an access opening for permitting products to be moved into and out of the display space, covering means for the aperture means including at least one barrier door for substantially covering the access opening, the aperture means including at least one additional opening and the covering means having at least one gate for covering the additional opening, air circulation means for providing selective circulation of a plurality of air bands in paths within the cabinet about the display space to maintain an air flow curtain inside of the cabinet adjacent to the barrier door, at least one of the air bands cooled by contact with the refrigeration means, and the cabinet including conduit means enabling the air bands to flow in contact with one another over a part of the circulation path in addition to the length of the air flow curtains; the method comprising the steps of:

selectively operating the display cabinet in a refrigeration cycle of operation and in a defrost cycle of operation; during a refrigeration cycle, circulating the air bands through the conduit means so that the air bands maintain air flow curtains inside of the cabinet adjacent to the barrier door, and propelling at least one of the air bands through the refrigeration means; during a defrost cycle of operation, terminating operation of the refrigeration means, opening the cover means for the aperture means and reversing the direction of the air circulation means, causing ambient air to be drawn into the display cabinet and to flow through the conduit means and into contact with the refrigeration means to defrost the same, and causing the defrost ambient air to be ejected from the cabinet through the aperture means.

4,361,013

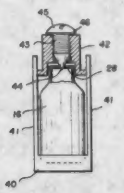
PORTABLE REFRIGERATOR

Robert C. Skeele, 200 Waring Rd., Syracuse, N.Y. 13224

Continuation-in-part of Ser. No. 129,429, Mar. 12, 1980, which is a continuation-in-part of Ser. No. 14,809, Feb. 26, 1979, abandoned, which is a continuation-in-part of Ser. No. 966,199, Dec. 4, 1978, abandoned. This application Mar. 13, 1981, Ser. No. 243,553

Int. Cl.³ F25B *41/04;* F25D *3/10*

U.S. Cl. 62—223 **9 Claims**



1. A thermostat system for controlling the temperature of a refrigerator chamber cooled by vapor escaping from an opening in a container of pressurized liquid positioned in said chamber, said thermostat system comprising:

a. a thermally expandable and contractible support frame fixed relative to the base of said container with a movable end extending to the region of the top of said container;

b. said support being in thermal communication with said container so said movable end moves in response to the temperature of said container;

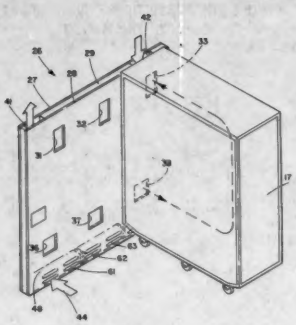
c. means positioned by said movable end for opening and closing said vapor opening; and

d. said positioned means being arranged for opening said vapor opening when said chamber warms said container and said frame to an upper threshold temperature and for closing said vapor opening after escape of vapor from said container lowers the temperature of said container and said frame to a lower threshold temperature substantially below the temperature of said chamber.

4,361,014
PANEL AIR CHILLER

Edward S. Blain, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Mar. 19, 1981, Ser. No. 245,477
Int. Cl.³ F25D *15/00*
U.S. Cl. 62—237 10 Claims



1. A panel air chiller for use with a portable storage unit of the type that carries items to be cooled, said panel air chiller including in combination:

first and second spaced apart parallel panels,

thermal insulation disposed between and in contact with said panels,

said thermal insulation material having formed therein at least a first and a second chamber between said panels thereby establishing passages between said panels and through said thermal insulation material,

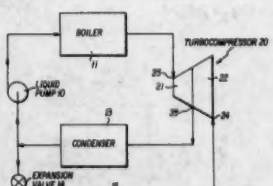
said first chamber including means to extract heat from air passing thereover to thereby cool said air and at least one return air opening through one of said panels to communicate with said portable storage unit, and

a fan means coupled to the space between said panels and to said first chamber to thereby draw air through said return air opening and past said means to extract heat from said air and to deliver air cooled by said means to extract heat to and through said second chamber to at least one cool air supply opening, said cool air supply opening adapted for coupling to said portable storage unit.

4,361,015
HEAT PUMP

Anand J. Apte, 4904 Cushing Dr., Kensington, Md. 20795

Filed Jan. 8, 1981, Ser. No. 223,270
Int. Cl.³ F25B *27/02*
U.S. Cl. 62—238.4 7 Claims

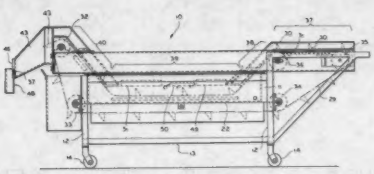


1. In a single working fluid heat pump system having a first subsystem with means for heating the fluid from a liquid to a vapor under pressure and a fluid motor driven by expansion of said vapor, a second subsystem with means for evaporating said fluid from a liquid to vapor and a compressor driven by said motor for compressing the fluid vapor from said evaporating means, and a condenser common to both subsystems for condensing the combined expanded fluid vapor output of said motor and the compressed fluid vapor output of said compressor to a liquid, the improvement wherein said motor and compressor are combined in a single integrated unit having one input to said motor, another input to said compressor, and a single output chamber therefor for mixing the expanded motor driving vapor with the compressed compressor vapor.

4,361,016
APPARATUS FOR GLAZING FROZEN FOODS

Leslie Multack, 3811 Brett La., Glenview, Ill. 60025

Filed Feb. 2, 1981, Ser. No. 230,453
Int. Cl.³ F25D *17/02*
U.S. Cl. 62—374 4 Claims



1. Apparatus for treating frozen articles by immersion in a liquid bath, said apparatus of the type having a conveyor belt following a path entering and exiting said bath, said apparatus comprising:

said belt path having a first generally horizontal segment,

a second generally descending segment descending into said bath,

a third generally horizontal segment in said bath,

a fourth generally ascending segment from said bath;

means formed on said belt to divide said belt into individual flights,

said dividing means including a plurality of upstanding flexible steps;

means to limit the migration of said articles from each said flight;

means to control the temperature of said bath;

means to control the time during which the articles remain in said bath;

means to separate said articles to limit the freezing together of said articles during travel through said bath,

said separating means including means to intermittently flex said belt dividing means during travel of said belt through said bath; and

means to collect said articles after said articles exist from said bath.

4,361,017
PATTERN MECHANISM

Otto Hintsch, Wallisellen, Switzerland, assignor to Karl Mayer Textil-Maschinen-Fabrik, Frankfurt, Fed. Rep. of Germany

Filed Jun. 6, 1980, Ser. No. 157,056
Claims priority, application Switzerland, Jun. 12, 1979, 5473/79
Int. Cl.³ D04B *23/00*
U.S. Cl. 66—207 7 Claims

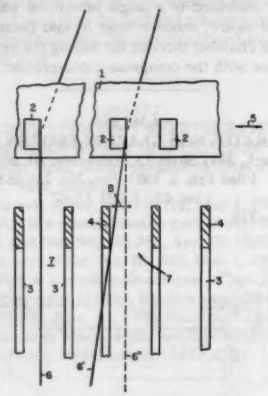
1. In combination with a guide bar of a warp knitting machine, a pattern mechanism comprising

an elongated flexible tension element secured to said guide bar at one end to a fixed point at an opposite end;

a plurality of main control elements for selectively varying the effective length of said tension element relative to said guide bar, each said control element having a stroke for

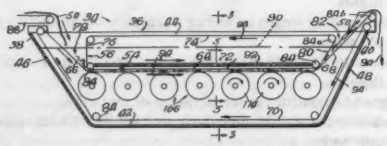
producing a shogging motion on said guide bar equal to a multiple of a given value; and

at least one supplemental program-controlled control element for selectively varying the effective length of said



tension element relative to said guide bar, said program-controlled control element having a stroke for producing a shogging motion on said guide bar equal to a fraction of said given value.

4,361,018
CONTINUOUS LAUNDERING
Paul H. Gallagher, 105 W. Adams St., Chicago, Ill. 60603
Filed Apr. 21, 1980, Ser. No. 141,952
Int. Cl.³ D06F *15/00*
U.S. Cl. 68—43 **16 Claims**



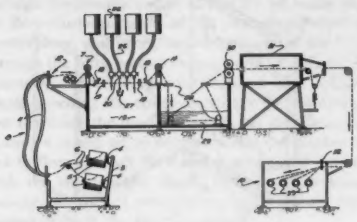
1. Apparatus for laundering goods, comprising,

a tank for holding a quantity of laundering water to establish a normal water level within the tank, and the tank having an inlet end and an outlet end,

conveyor means including a pair of endless belts made up of mesh enabling water to flush therethrough substantially unimpeded, the belts having respective runs adjacent each other, guiding means joining the side edges of said respective runs together and forming a tube thereof continuous circumferentially therearound, the guiding means being operative for positioning those respective runs in horizontal position, below the water level, and the tube extending in an operating range nearly the length of the tank, the belts forming V-shape inlet and outlet sections respectively adjacent the inlet and outlet ends of the tank, and the conveyor means being operative for receiving goods, in loose and non-continuous form, in the V-shape inlet section, carrying them through the tube, and carrying them through the V-shape outlet section, up out of the water and out of the tank, and

means for agitating the goods including movable members spaced along said tube and yieldingly engaging at least one of the said runs and thereby agitating the goods between the runs, and reaction means on the side of the runs opposite the movable members and thereby positioned for receiving the thrust from the movable members.

4,361,019
DYEING YARNS
Roderick A. Maund, 54 Pemberton St., Botany, Sydney, N.S.W., Australia 2019
Filed Jul. 30, 1980, Ser. No. 173,599
Int. Cl.³ D06B *1/02*
U.S. Cl. 68—62 **8 Claims**



1. Apparatus for dyeing a plurality of yarns comprising:

a battery of yarn holders;

a plurality of pliable tubes for guiding passage of said yarns from said battery to outlet ends of said tubes, said outlet ends of said tubes forming a planar array;

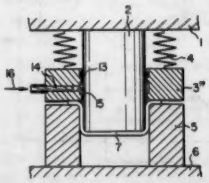
means for drawing a plurality of yarns from said battery through each of said tubes and longitudinally through the remainder of said apparatus at a desired rate of movement, said plurality of yarns forming a web of yarns lying side by side at said outlet ends of said tubes and extending through a portion of the remainder of said apparatus;

at least one nozzle reciprocating transversely of the web of yarns for intermittently applying liquid dye to the longitudinally moving web of yarns at or near the boiling temperature of the liquid dye;

means for feeding liquid dye to said nozzle at a temperature at or near the boiling point of the dye; and

means for receiving the washed web directly from said nozzle after application of the liquid dye without additional heating of the yarns and for storing of the individual yarns forming the web.

4,361,020
DRAWING APPARATUS
Kazumi Hirota, Tokyo, and Kikuo Matsuoka, Fujisawa, both of Japan, assignors to Toyo Seikan Kaisha, Limited, Tokyo, Japan
Division of Ser. No. 921,162, Jul. 3, 1978, Pat. No. 4,225,553.
This application Mar. 31, 1980, Ser. No. 135,760
Claims priority, application Japan, Jul. 5, 1977, 52-79532
Int. Cl.³ B21D *39/08*
U.S. Cl. 72—57 **2 Claims**



1. A drawing machine comprising a punch, a die having a cavity corresponding to said punch, and a blank holder disposed to surround said punch, said punch being used to draw a thin sheet having a relatively low rigidity into said cavity in

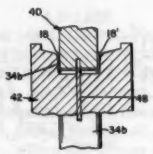
said die while being clamped between said blank holder and said die, to manufacture a formed article, which machine comprises: a sealing member disposed between said punch and said blank holder to form a space defined by said, punch, blank holder and sealing member, said blank holder having a port communicated to said space to supply pressurized fluid into said space, so that said thin sheet is drawn while the surface of said thin sheet which is opposite to face of said thin sheet which is brought into contact with the radiused corner of said die being depressed over the radiused corner of said die by a hydrostatic pressure of said fluid substantially throughout drawing, thereby to prevent creation of wrinkles on said formed article at said radiused corner of said die.

4,361,021

METHOD AND APPARATUS FOR FORMING ANGLE RING FLANGES

Robert D. McVay, Pickerington, and Herman J. Schaeufele, Columbus, both of Ohio, assignors to United McGill Corporation, Columbus, Ohio

Filed May 5, 1980, Ser. No. 146,433
Int. Cl.³ B21B *5/00*; B21D *17/04*; B21H *1/06*
U.S. Cl. 72—71 **9 Claims**



1. A method of forming angle ring flanges from sheet metal comprising: forming a blank strip of flat sheet metal having a width at least equal to four times the height of the desired standing leg of the resultant angle ring flanges; forming the strip into an annular shape; butt welding the ends of the strip to provide an annular band; machining the weld portion to a thickness substantially equal to the sheet metal thickness; rotating and rolling the band in forming rolls to a channel ring shape with a cylindrical base and outwardly disposed substantially right angle channel flanges by progressively merging the forming rolls; and with the channel form in its finish formed channel shape still in the forming rolls, causing the forming rolls to undergo a final merging movement to continue rotating the channel and to simultaneously shear a narrow ring of metal from the center of the base of the finish formed ring shaped channel to make two substantially identical substantially right angle ring flanges.

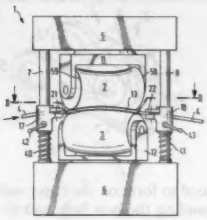
4,361,022

WORKPIECE GUIDES FOR STRAIGHTENING APPARATUS

Heinz Hartkopf, Solingen, Fed. Rep. of Germany, assignor to Th. Kieserling & Albrecht GmbH K.G., Solingen, Fed. Rep. of Germany

Filed Jul. 1, 1980, Ser. No. 165,219
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1979, 2927542
Int. Cl.³ B21D *3/04*
U.S. Cl. 72—99 **7 Claims**

1. Apparatus for straightening elongated cylindrical workpieces comprising: opposed straightening rollers through which elongated cylindrical workpieces are moved generally longitudinally, opposed guide members extending between said rollers and having front guide edges horizontally co-extensive with the rollers and positioned on opposite sides of a workpiece moving between said rollers, said guide members having opposite side edges, releasable clamping means for releasably clamping said guide members adjacent said side edges thereof for a first individually adjustable vertical movement of said guide members relative to a workpiece in situ for properly locating said front guide edges vertically with respect to said workpiece during initial or intermittent adjustment, and



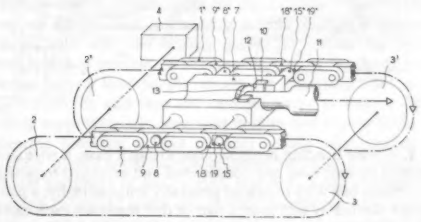
said clamping means further providing a clamping device for each side edge for effecting a second individually and generally horizontally adjustable movement thereof in a direction perpendicular to the first movement.

4,361,023

MANDREL-RESTRAINING ASSEMBLY FOR A TUBE-ROLLING MILL

Claude Blanquet, 3, rue de la Tete Noire, Berlaimont, France 59145, and Andre Fichel, 45 Avenue des Lilas Les Floralies, Marly, France 59770

Filed Jun. 2, 1981, Ser. No. 269,451
Claims priority, application France, Jun. 6, 1980, 80 12609
Int. Cl.³ B21B *47/10*; B21C *45/00*
U.S. Cl. 72—209 **8 Claims**



1. In a mandrel - restraining assembly for holding back and releasing a mandrel carrying a tube in a rolling mill, the assembly comprising two endless chains arranged in parallel, a carriage articulated to two opposed links of the said chains and driven by the chains, and a mandrel-retaining fork on the carriage, the improvement which comprises an additional connection between the carriage and another link of at least one of the chains, said connection providing play in the lengthwise direction of the chains, and the fork being located in the downstream part of the carriage.

4,361,024

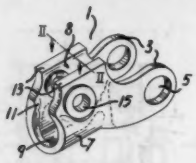
COUPLING CLAMP AND A METHOD OF MANUFACTURE THEREFOR

Bernard Haldric, Vendome, France, assignor to NACAM, France

Filed May 28, 1980, Ser. No. 154,077
Claims priority, application France, May 31, 1979, 79 13974
Int. Cl.³ B21D *53/36*
U.S. Cl. 72—379 **11 Claims**

1. A method of forming from a metal blank a coupling clamp having an axially-slotted hollow hub forming a socket for a shaft and lugs projecting from opposite sides of said slot, the lugs being planar and pierced by a hole for the passage of a bolt

for tightening the clamp to bear radially on the shaft, the method comprising the step of submitting the inner surface of each lug to a striking operation to cause lug material to be outwardly displaced to form on the outer surface of each lug a raised boss surrounding the bolt hole and to form a recess on the inner surface of the lug.

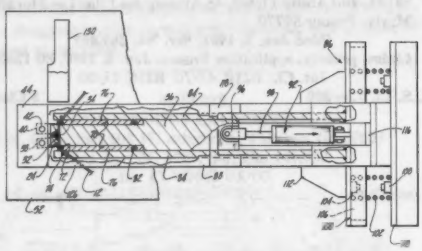


4,361,025

WIRE BENDING MACHINE

Edwin E. Foster, and Thomas E. Foster, both of Austin, Tex., assignors to Michael Ladney, Jr., Grosse Pointe Shores, Mich.

Filed Nov. 14, 1980, Ser. No. 206,967
Int. Cl.³ B21F *1/00*
U.S. Cl. 72—381 **4 Claims**



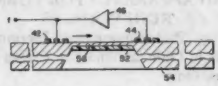
1. A wire bending machine comprising a base, a wire guide carried by said base and constructed and arranged to position a segment of a wire to extend generally longitudinally, a pair of levers carried by said base, a pair of first mandrels each carried by one of said levers and disposed in longitudinally spaced apart relationship adjacent one side of the segment of wire carried by said guide, a first slide carried by said base, a second mandrel carried by said slide and, when said slide is retracted, disposed on the other side of the segment of wire, said first slide being constructed and arranged to advance said second mandrel generally transversely to and across the longitude of the segment of wire along a path passing between said first mandrels, and a cam and a follower associated with each lever with one of the cam and follower carried by said first slide and the other carried by its associated lever, each said cam, follower and associated lever being constructed and arranged to move said first mandrels toward each other essentially simultaneously with advancement by said first slide of said second mandrel across the longitude of the segment of wire along the path between said first mandrels, whereby a loop is formed in the wire segment having a return bend and a pair of legs extending generally transversely to the longitude of the segment of wire, a third pair of mandrels spaced apart longitudinally beyond said first mandrels and disposed on said other side of the segment of wire, a second slide carried by said base, a pair of fourth mandrels carried by said second slide in spaced apart relation longitudinally beyond said pair of third mandrels and normally disposed on said one side of the segment of wire and said second slide being constructed and arranged to move said pair of fourth mandrels generally transversely across the longitude of the segment of wire to bend the wire around said third mandrels, whereby portions of the wire distal from said legs of said loop are inclined with respect to each other and with respect to portions of the wire disposed between said legs and said first mentioned inclined portions.

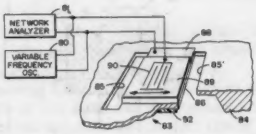
4,361,026

METHOD AND APPARATUS FOR SENSING FLUIDS USING SURFACE ACOUSTIC WAVES

Richard S. Muller, 51 Kenyon Ave., Kensington, Calif. 94708, and Richard M. White, 350 Panoramic Way, Berkeley, Calif. 94704

Filed Jun. 24, 1980, Ser. No. 162,604
Int. Cl.³ G01N *31/06*
U.S. Cl. 73—23 **14 Claims**





1. Apparatus for sensing the presence of a specific fluid, comprising:

(a) a substrate in which surface acoustic waves can be propagated, said substrate having a planar top surface and a planar bottom surface opposite thereto;

(b) a transmitting transducer located on said top surface for propagating surface acoustic waves in said substrate along a path;

(c) a receiving transducer located on said top surface for receiving said surface acoustic waves propagated in said substrate along said path; and

(d) a sensing member located on the bottom surface of the substrate in the path of the surface acoustic waves for interacting therewith and having a physical characteristic that varies the surface acoustic waves when in the presence of a specific fluid, said member interacts with the waves so that the presence of the fluid is sensed by the receiving transducer as a variation of the surface acoustic waves.

4,361,027

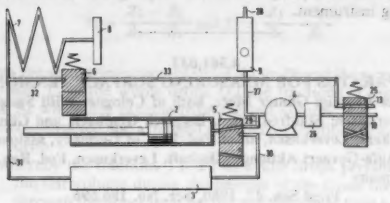
MEASURING APPARATUS FOR THE QUANTITATIVE DETERMINATION OF A COMPONENT OF A GAS MIXTURE

Rudi Schmitt, Karl Kreuter Str. 32, 6700 Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 18, 1980, Ser. No. 178,797
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1979, 2934426
Int. Cl.³ G01N *7/02*
U.S. Cl. 73—23 **13 Claims**

1. An improved measuring apparatus for the quantitative determination of a component of a gas mixture of the type having a sorption unit containing material which sorbs said component, a metering pump for forcing a predetermined volume of the gas mixture through the sorption unit, the gas mixture being drawn into the metering pump by a probe which opens into the gas mixture for intake of said predetermined

volume and a device for measuring a parameter of the gas which emerges from the sorption unit, the improvement characterized by the probe having a thermocouple in the region of



the intake opening and a reference sensing device in a cable from the thermocouple in differential connection, and further comprising a signal converter for indication of the temperature values.

4,361,028

SYSTEM FOR MEASURING PARTICULATE DISCHARGE FROM VEHICULAR INTERNAL COMBUSTION ENGINE

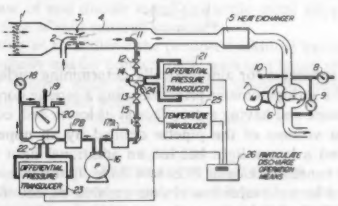
Sigeru Kamiya, Chiryu; Junji Wakayama, Okazaki; Nobutoshi Hayashi, Nishio; Hiroshi Noguchi, Gotenba; Kenichi Uchida, and Nobuhisa Mori, both of Susono, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Feb. 19, 1981, Ser. No. 235,987

Claims priority, application Japan, Feb. 22, 1980, 55-21769

Int. Cl.³ G01N *15/00*

U.S. Cl. 73—28 **3 Claims**



1. In a system for measuring the quantity of particulates contained in exhaust gases from an internal combustion engine, comprising a mixing section in which the engine exhaust gases are mixed with and diluted by a large amount of clean air, a blower means for sucking the engine exhaust gases and the clean air into said mixing section and discharging the mixed and diluted gases therefrom, gas sampling means for sampling a part of the flow of the diluted gases, said gas sampling means including a sampled gas line for the flow of the sampled gases, a sampling probe through which the sampled gases flow into said sampled gas line, a sampling pump disposed in said sampled gas line for sucking the sampled gases into said line and discharging the sampled gases therefrom, filter means disposed in said line between said probe and said sampling pump for collecting the particulates contained in the sampled gases, the improvement which comprises means for detecting the pressure drop across said particulate collecting filter means and converting the detected pressure drop into an electric signal, and a particulate discharge operation means operative to compute the quantity of particulate content of the engine exhaust gases on the basis of the time differential of said electric signal.

4,361,029

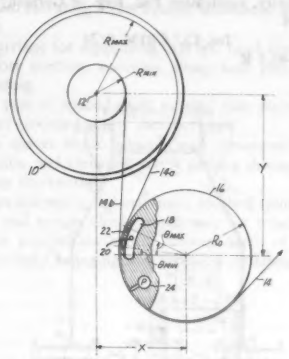
PNEUMATIC RADIUS SENSOR

Sanford Platter, Boulder, Colo., assignor to Computer Peripherals, Inc., Minneapolis, Minn.

Filed May 27, 1980, Ser. No. 153,248

Int. Cl.³ B65H *17/32;* **G01B** *13/00*

U.S. Cl. 73—37.7 **6 Claims**



1. Apparatus for determining the outer radius of flexible tape wrapped about a reel, comprising: a fluid bearing positioned adjacent said reel, said bearing having an arcuate periphery about which a portion of the flexible tape is wrapped, said bearing having fluid supply means for supplying fluid to a region between said tape and said periphery to form a fluid bearing supporting said tape, said fluid in said region being at a bearing pressure; a fluid chamber within said bearing; a plurality of orifii in fluid communication between said chamber and said periphery of said bearing, said orifii being arranged in a pattern extending along said periphery between a maximum location and a minimum location at which the tape travelling to or from said reel may first be supported by said fluid, said orifii being so disposed and arranged as to admit fluid into said chamber through those orifii in communication with said region of the periphery having fluid supporting said tape and to expel fluid from said chamber through those orifii not in communication with said region when said tape is at less than said maximum location, said orifii being further disposed and arranged as to provide a fluid pressure within said chamber which varies at approximately a linear rate between a minimum pressure and a maximum pressure as the first support point for said tape varies between its minimum and maximum locations; and pressure sensing means within said chamber for sensing the fluid pressure within said chamber; whereby the radius of said tape wrapped on said reel can be determined from the fluid pressure in said chamber and the relationship

$$Rr = X\cos(KP) + Y\sin(KP) - Rb$$

where X is the horizontal component of the distance between the axis of said reel and the axis of said arcuate periphery of said bearing, Y is the vertical component of the distance between the axis of said reel and the axis of said arcuate periphery of said bearing, Rb is the radius of said arcuate periphery of said bearing, P is the pressure within said chamber and K is a constant.

4,361,030

METHOD FOR LEAK DETECTION IN A PIPELINE SYSTEM AND A MEASURING WELL FOR USE IN A PIPELINE SYSTEM IN THE METHOD FOR LEAK DETECTION

Gerhard Heide, Willbeckerstrasse 30, 4006 Erkrath 2, Fed. Rep. of Germany

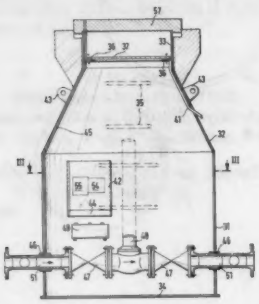
PCT No. PCT/DE79/00117, § 371 Date May 6, 1980, § 102(e) Date May 6, 1980, PCT Pub. No. WO80/00746, PCT Pub. Date Apr. 17, 1980

PCT Filed Sep. 25, 1979, Ser. No. 193,577

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1978, 2841674

Int. Cl.³ G01M *3/28*

U.S. Cl. 73—40.5 R **15 Claims**



1. In a method for monitoring an interconnected pipeline distribution network, for losses resulting from leaks, the network being comprised of a plurality of subnetworks, wherein at least one flow characteristic is recorded and analyzed at check sites for a particular subnetwork at given times in an automatic manner over a test-time interval, and whereby leaks detected in the subnetworks are localized by specific test and localization procedures, the improvement comprising:

arranging the check sites across the distribution network in a spatially fixed arrangement, and measuring the flow characteristics during an always equal time interval of about ½ hour at least one of once a day, and once a week, at all check points at those times when the regularly measured flow characteristic remains substantially constant over a substantially long time interval.

4,361,031

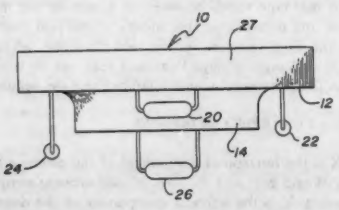
SENSING DEVICE

Ralph A. Perry, Indianapolis, and Raymond J. Andrejasich, Carmel, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed Oct. 17, 1980, Ser. No. 197,955

Int. Cl.³ G01N *25/18*

U.S. Cl. 73—61.1 R **5 Claims**



1. A sensing device for detecting a substance including hydrocarbons on the surface of water, comprising a floatation means for floating on said water surface and for supporting at least one sensing element for detecting said substance, said floatation means being composed substantially of nitrile and having printed circuit means deposited on said nitrile for providing electrical connection between said sensing element and an electrical coupling means for coupling said element to a sensing instrument.

4,361,032

APPARATUS FOR MEASURING SURFACE TENSION

Werner Lessnig; Günter Metz, both of Cologne; Willi Spiegel, Leverkusen; Manfred Faust, Bergisch Gladbach, and Günter Junkers, Leverkusen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 12, 1980, Ser. No. 186,696

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1979, 2937476

Int. Cl.³ G01N *13/02*

U.S. Cl. 73—64.4 **3 Claims**

1. An apparatus for automatically determining surface tension by the stalogmometer principle using a pipette containing a test volume and having a drop face at its lower end, comprising a test volume of the pipette defined by an upper light barrier and a lower light barrier, an additional light barrier arranged beneath the drop face, said three light barriers being connected to an evaluation circuit capable of counting the number **T0** of whole drops appearing at the drop face upon the flow of the test volume out of said face, said evaluation circuit being comprised of

(a) an electronic time counter which is connected by circuitry to the three light barriers

(b) a store in which the following conditions are storable:

(I) the time counter state **Z1** corresponding to the last drop **N** before the response of the upper light barrier and linked with the meniscus level.

(II) the time counter state **Z2** corresponding to the passage of the meniscus through the upper light barrier,

(III) the time counter state **Z3** being linkable with the meniscus level at the upper light barrier after passage of the next drop **N+1**,

(IV) the number **T0** of whole drops detected during the outflow occurring after passage of the drop **N+1** from the test volume on the drop face by the light barrier,

(V) the time counter state **Z4** corresponding to the last drop **N+1+T0** before the response of the lower light barrier and being linkable with the meniscus level,

(VI) the time counter state **Z5** corresponding to the passage of the meniscus level through the lower light barrier,

(VII) the time counter state Z6 being linkable with the meniscus level at the lower light barrier after passage of the subsequent drop N+T0+1;

(C) a computer which is capable of forming the quotient

$$T_1 = \frac{Z_3 - Z_2}{Z_3 - Z_1} \text{ and } T_2 = \frac{Z_5 - Z_4}{Z_6 - Z_5}$$

from the stored time counter states Z1 to Z6 and then can form the sum T_x of the whole drops TQ and fractions of drops T1 and T2 which are issuable from the test volume

so constructed and arranged as to detect fractions of a whole drop

whereby the fractions T1, T2 of whole drops pertaining to the test volume during the passage of the liquid meniscus through the upper light barrier and the lower light barrier, from the pulse trains occurring at the three light barrier, are determinable.

4,361,033

METHOD FOR SELECTING AN ADDITIVE FOR ELECTRICAL CONTACTS

Han J. Kim, Greensburg, Pa.; Thomas E. Peters, Chelmsford, and John Gustafson, Harvard, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Division of Ser. No. 628, Jan. 2, 1979, Pat. No. 4,294,616. This application Dec. 10, 1980, Ser. No. 214,819

Int. Cl.³ G01N *13/02*

U.S. Cl. 73—64.4 **4 Claims**

1. A method for selecting a suitable additive for electrical contacts of the type comprising a ductile metal or ductile metal alloy having relatively high electrical and thermal conductivity and a sufficient amount of a weld inhibiting material to impart weld inhibiting qualities to the working surface of the contact comprising:

forming a sintered compact of the proposed additive;

liquifying said ductile metal or ductile metal alloy on the surface of said sintered compact;

measuring the contact angle formed between the liquid phase of said ductile metal or ductile metal alloy and the surface of said sintered compact;

selecting as an additive the proposed additive having a substantially smaller contact angle with said liquid phase than the contact angle that said weld inhibiting material has with said liquid phase.

4,361,034

PORTABLE HARDNESS TESTER

Roland D. Borgersen, deceased, late of Bryn Mawr, Pa. by Lula A. Borgersen, administrator; James G. Mullen, Bala Cynwyd, Pa., and James W. Lineberger, Wenonah, N.J., assignors to King Tester Corporation, King of Prussia, Pa.

Filed Feb. 13, 1981, Ser. No. 234,393

Int. Cl.³ G01N *3/42*

U.S. Cl. 73—81 **13 Claims**

1. Apparatus for supporting a Brinell method metal hardness test head comprising:

(a) a base including:

(i) a central portion of generally rectangular parallelepiped configuration;

(ii) a plurality of coplanar petal-like supports integral with and extending outwardly from a lower part of said central portion;

downwardly facing surfaces of said central portion and said supports being coplanar and contiguous with one another;

(iii) an anvil support portion integral with and extending laterally in cantilever fashion from said central portion remote from said downwardly facing surface of said central portion, having an upwardly facing planar anvil support surface;

(iv) webs perpendicular to said contiguous downwardly facing surface, integral with said central portion and said supports, providing bracing between upper surfaces of said supports and lateral surfaces of said central portion;

said central portion including a threaded bore perpendicular to and opening oppositely from said downwardly facing contiguous surface;

said central portion including an external lateral bore perpendicular to and intersecting said threaded bore;

(b) an elevating screw in threaded engagement with said threaded bore and including a lateral bore therein communicating with said lateral bore of said central portion;

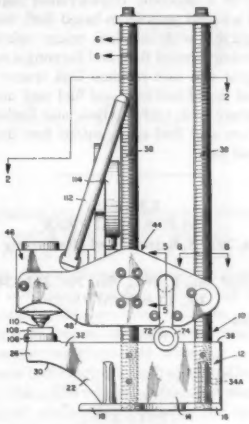
(c) means within said communicating lateral bores for bracing said elevating screw against movement relative to said bore;

(d) a carriage for supporting said test head above said anvil support portion, movable along said elevating screw, including:

(i) a pair of spaced-apart parallel side plates bracketing said elevating screw therebetween;

(ii) a spacer block between and connected to said side plates, said elevating screw passing through a passageway therewithin;

(iii) an internally and externally toothed spindle journaled in said spacer block passageway for rotation about an axis parallel therewith, internal teeth of said spindle drivingly engaging said threaded elevating screw;



(iv) an idler gear journaled between said parallel plates and drivingly engaging said external teeth of said spindle;

(v) a driven bevel gear mounted on a common first shaft and rotatable unitarily with said idler gear;

(vi) a driving bevel gear, mounted on and rotatable unitarily with a second shaft, in driving engagement with said driven bevel gear;

(vii) said second shaft extending through a first one of said side plates;

(viii) a cranking handle connected to said second shaft outboard of said first side plates, facilitating rotation of said second shaft by an operator turning said handle;

(ix) a bearing collar separating said driving bevel gear and said second shaft from said first side plate, immovable with respect to said side plates and including:

(1) a shoulder portion having axial length at least equal to thickness of said first side plate and an axial bore therein journaling a portion of said driving bevel gear for rotation of said second shaft relative to said collar; and

(2) a flange portion, abutting an inwardly facing surface of said first side plate, extending radially outwardly about said shoulder portion at least to where driving

bevel gear periphery is at least oblique to said inwardly facing surface of said first plate.

4,361,035

NONSTAINING LEAK TRACER SOLUTION AND METHOD EMPLOYING SAME

Orlando G. Molina, Westminster, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 66,608, Aug. 15, 1979, Pat. No. 4,326,981. This application Sep. 15, 1980, Ser. No. 186,990

Int. Cl.³ G01M *3/30, 3/20;* G01N *19/08*

U.S. Cl. 73—104 **19 Claims**

10. In a method for detecting leaks in a fuel tank and fuel lines associated with said tank, which comprises introducing into said fuel tank and said lines a leak tracer solution consisting essentially of water, a nonionic oxyalkylated aliphatic alcohol surfactant, and a water soluble dye, viewing the external surfaces of said fuel tank and said lines under lighting conditions to obtain dye smears indicating the location of leaks in said surfaces, resulting from passage of leak tracer solution through said leaks, marking the location of said leaks, and removing said leak tracer solution from said tank and lines, leaving residual leak tracer solution entrapped in said fuel tank and fuel lines; the improvement which comprises introducing into said fuel tank and/or said lines a depuddling agent consisting essentially of a nonionic oxyalkylated aliphatic alcohol surfactant and a liquid petroleum-based fuel, said depuddling agent being miscible with said leak tracer solution, and with said liquid petroleum-based fuel, and forming a solution of said depuddling agent and said residual leak tracer solution, and introducing said liquid fuel into said fuel tank and/or said fuel lines for admixture with said solution, and flushing the resulting mixture from said fuel tank and/or fuel lines with additional said liquid fuel.

4,361,036

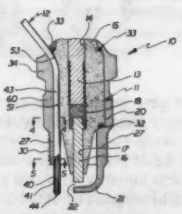
ENGINE ANALYZER

Sol J. Levenson, 2636 S. Belvoir Blvd., University Heights, Ohio 44118

Filed Jan. 8, 1981, Ser. No. 223,334

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—116 **8 Claims**



1. Apparatus for use in sensing the temperature in a cylinder of an internal combustion engine, said apparatus comprising a spark plug having a central electrode located on the axis of said spark plug, a ceramic insulator encircling said centrally located electrode, a metal casing encircling said ceramic insulator, a second electrode extending from said metal casing to a position adjacent to said electrode but displaced axially therefrom, said metal casing having continuous threads formed therein and encircling said metal casing for threaded engagement with corresponding threads of an internal combustion engine, and a thermocouple located within the outer periphery of said metal casing and extending to a position adjacent to said gap between said electrodes, said thermocouple having a temperature-sensing junction adjacent to said gap and which junction is located in the cylinder when the spark plug is threaded with the corresponding threads of the engine, and a meter connected with said thermocouple for indicating the temperature in the cylinder.

4,361,037

DEVICE FOR ELECTRIC MONITORING OF THE LEVEL OF A LIQUID IN A CONTAINER

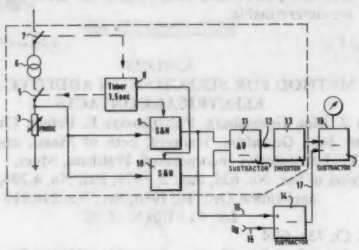
Wolfgang Hauschild, Bad Soden, and Hans J. Baumgart, Schwalbach, both of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 5, 1980, Ser. No. 204,143

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1979, 2946585

Int. Cl.³ G01F *23/10*

U.S. Cl. 73—295 **8 Claims**



1. In a device for electric monitoring of the level of a liquid present in a container, with a temperature-dependent resistance probe which is immersed in the liquid the level of which is to be monitored, a source of constant current connectable to the resistance probe, the current controlled by a timer, with means, controlled by the timer, for detecting and storing an initial voltage drop on the resistance probe at an initial time and a measurement voltage at a defined time after the connection of the source and constant current, and means for evaluating these voltages by subtraction of the measurement voltage from the initial voltage in order to form a display voltage which corresponds to the level, the improvement further comprising

means for compensating for an influence of the change in level of the liquid, due to thermal expansion as a function of its initial temperature, on the display voltage, and

means for compensating for different heat transfers from the resistance probe to the liquid as a function of the initial temperature.

4,361,038

LIQUID LEVEL SENSOR

Alan L. Schuler, Hingham, Mass., assignor to General Dynamics Corporation, St. Louis, Mo.

Filed Dec. 1, 1980, Ser. No. 211,628

Int. Cl.³ G01F *23/22*

U.S. Cl. 73—295 **12 Claims**

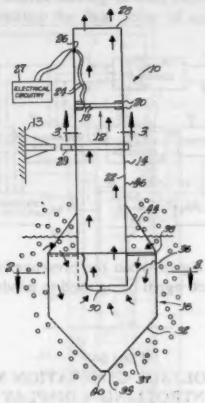
1. Apparatus for detecting a liquid level within a liquid-holding tank having

liquid level sensing means located at a predetermined depth in the tank, which sensing means disposed in a tube means mounted to the liquid tank is responsive to the difference in a physical property of the liquid in the tank and the vapor above the liquid surface,

said tube means comprising a stillwell means laterally surrounding said sensing means having an upper opening through which said stillwell means is in communication with the atmosphere and a lower opening through which said stillwell means is in communication with the liquid, said stillwell means isolating the liquid therewithin from surface disturbances of the liquid in said tank that would

expose said sensing means to a false apparent liquid level, and

shield means attached to the bottom portion of said stillwell



means in the path of bubbles flowing upwardly toward said lower opening for interdicting the upwardly-flowing bubbles and deflecting the bubbles away from said lower opening.

4,361,039

TANK FOR TRANSPORTING LIQUID MATERIAL

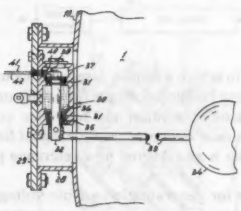
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed May 2, 1980, Ser. No. 146,085

Claims priority, application Netherlands, May 8, 1979, 7903575

Int. Cl.³ F04B *49/04*; G01F *23/10*

U.S. Cl. 73—313 **7 Claims**



1. A tank for transporting liquid material comprising an enclosed tank having an internal float, said float being pivoted to external indication means that signals the level of said float means and material within the tank, a pivot member interconnected to said float means and said member extending through a liquid seal means in a housing on said tank to said float means, said indication means comprising an electrical circuit having variable switch means associated with a movable portion of the pivot member, said portion and electrical circuit being located outside the tank, said pivot member being actuated responsive to the movements of said float, said electrical circuit including a signal device which indicates the position of said pivot member relative to said switch means and the level of material within said tank, said seal means comprising a seal element in said housing and said housing defining an air-free space filled with hydraulic fluid, said pivot member comprising a shaft that extends through said element and said fluid, said movable portion and said circuit being insulated from the liquid material in said tank and said signal device being positionable remote from said tank.

4,361,040

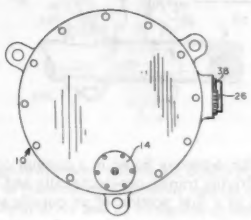
INTEGRATING ANGULAR ACCELEROMETER

Lael B. Taplin, Union Lake, and Bernard R. Teitelbaum, Beverly Hills, both of Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 15, 1980, Ser. No. 216,416

Int. Cl.³ G01P *15/08*

U.S. Cl. 73—503 **3 Claims**



1. An integrating angular accelerometer for measuring angular rate of a rotating body which comprises:

a housing fixedly attached to the rotating body having an annularly shaped channel operatively disposed therein;

means for remaining inertially fixed when said housing is rotated relative thereto which includes;

a seismic mass formed of tungsten and molybdenum rotatably supported within said housing;

an instrument ball bearing axially disposed intermediate said housing and a first end of said seismic mass;

viscous liquid means for improving the sensitivity of the output signal from said accelerometer with respect to changes in angular rate which includes;

mercury liquid disposed in said channel about the acceleration sensitive axis of said seismic mass, said channel dimensioned to provide laminar fluid flow within said mercury upon relative rotation of said housing and said seismic mass, said mercury and seismic mass having equally selected mass densities to make said seismic mass neutrally bouyant in said housing to eliminate detrimental effects of shock and vibration on said instrument bearing;

reservoir means fluidically coupled to said channel providing a temperature compensating expansion chamber for said mercury liquid;

splitter means operatively disposed in said housing and channel for generating a pressure difference on a first and second sensing region; and

means for sensing said pressure difference wherein the output signal is proportional to the angular velocity of said housing which includes;

a differential pressure transducer operatively disposed proximate to said first and second sensing region; and

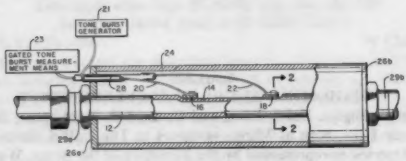
means for isolating said transducer from said first and second sensing region.

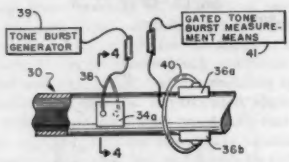
4,361,041

NON-INTRUSIVE ULTRASONIC LIQUID-IN-LINE DETECTOR FOR SMALL DIAMETER TUBES

Thomas C. Piper, Idaho Falls, Id., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 24, 1980, Ser. No. 190,303
Int. Cl.³ G01N *29/02*
U.S. Cl. 73—579 **9 Claims**





1. A means for detecting liquid in a conduit comprising:

at least one driving transducer electrically and mechanically connected to a first portion of an outside surface of the conduit;

at least one receiving transducer electrically and mechanically connected to a second spaced apart portion of an outside surface of the conduit;

means for exciting said drive transducer with an ultrasonic tone burst such that said conduit vibrates in an undulatory motion, said tone burst being transmitted to said receiver transducer; and

means for measuring the amplitude of said tone burst at an output of said receiver transducer while excluding responses of said receiver transducer after said tone burst is received, whereby the presence of a liquid in said conduit is detected.

4,361,042

DIGITAL TYPE ULTRASONIC HOLOGRAPHY APPARATUS

Fuminobu Takahashi, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 19, 1981, Ser. No. 225,993
Claims priority, application Japan, Jan. 21, 1980, 55-4640
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—603 **7 Claims**

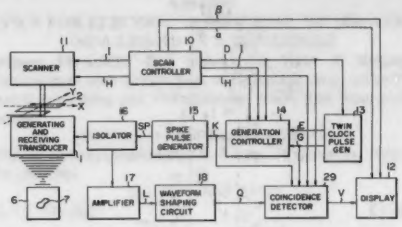
1. A digital type ultrasonic holography apparatus comprising:

first means for generating a clock pulse signal having a fixed period;

second means for transmitting ultrasonic pulses toward an object in synchronism with trigger pulses derived through the frequency division of said clock pulse signal and for receiving an object-modified wave of said ultrasonic pulses from said object to convert said object-modified wave into an electric signal;

third means for shaping said converted object-modified wave to produce an object-modified wave pulse signal having a predetermined pulse width shorter than said fixed period of said clock pulse signal; and

fourth means for discriminating whether or not a pulse is present in said object-modified wave pulse signal at a predetermined level-changing time of said clock pulse signal and within a predetermined time portion of the repetition interval of said trigger pulses and for generating



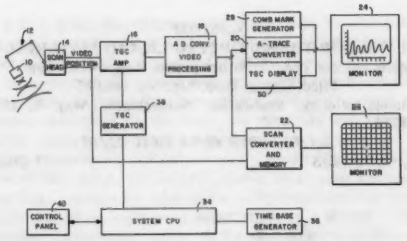
a coincidence signal when the presence is discriminated, said coincidence signal being used to produce a hologram of said object.

4,361,043

REFERENCE VOLTAGE GENERATION MEANS FOR CONTROLLING A DISPLAY

Gary L. Engle, Fair Oaks, Calif., assignor to General Electric Company, Rancho Cordova, Calif.

Filed Nov. 3, 1980, Ser. No. 203,656
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—620 **9 Claims**



1. In a system in which a display is responsive to signals from a scanner including position voltages from said scanner relative to a reference scanner position and reference voltage, means for establishing a new reference position signal for said display when said scanner is at a desired new reference position comprising

voltage means for generating a variable voltage,

comparator means for receiving and comparing said variable voltage and said position voltage from said scanner, and,

means responsive to said comparator means for holding said voltage means at a fixed voltage level when said comparator means indicates that said variable voltage exceeds said position voltage.

4,361,044

SCANNING ULTRASONIC PROBE

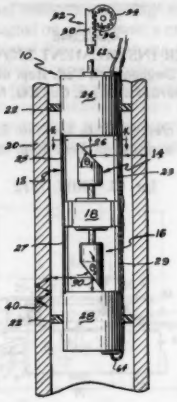
David S. Kupperman, Oak Park, and Karl J. Reimann, Lisle, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 9, 1980, Ser. No. 214,802
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—623 **13 Claims**

1. An ultrasonic probe for examining a test piece comprising:

at least one transducer assembly capable of producing an ultrasonic beam, at least one circumferential wave mirror aligned with said transducer assembly such that said mirror is capable

of reflecting the ultrasonic beam from said transducer assembly toward a test piece and capable of directing a reflected ultrasonic wave from the test piece to said transducer assembly for detection, said mirror having at least two surfaces which are capable of offsetting the final point of emergence from said



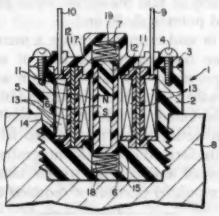
mirror of the incident ultrasonic beam from the transducer to a point removed from the optical axis of said transducer assembly, thereby enabling a circumferential shear wave to be produced in the test piece; and a mirror drive means coupled to said mirror.

4,361,045

VIBRATION SENSOR

Shinichiro Iwasaki, Auburn Heights, Mich., assignor to Aisin Seiki Company, Limited, Kariya, Japan

Filed Aug. 29, 1980, Ser. No. 182,847
Int. Cl.³ G01H 1/00
U.S. Cl. 73—654 **3 Claims**



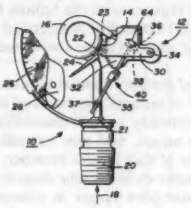
1. A vibration sensor comprising:
a casing;
a permanent magnet defining a magnetization direction and movably disposed in said casing;
spring means mounted in said casing for supporting said movable permanent magnet;
a thin plate core of magnetically soft material defining a longitudinal axis and disposed within said casing adjacent to the vicinity of a course of movement of said movable permanent magnet;
an electrical coil disposed around said magnetically soft material core, whereby said permanent magnet and magnetically soft material core are disposed in said casing such that the magnetization direction of said magnet is parallel to the longitudinal axis of said core;
means for detecting vibrations based on correspondingly produced movement of said magnet, comprising;
means for applying a pulse voltage to said coil to saturate magnetically said core: and
means coupled to said coil for producing a vibration output signal indicative of the movement of said magnet and therefore of said vibrations based on the time between application of said pulse voltage and saturation of said core.

4,361,046

CALIBRATION ADJUSTMENT FOR GAUGE INSTRUMENTS

Richard H. Wetterhorn, Fairfield, and William S. Kosh, Shelton, both of Conn., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 3, 1981, Ser. No. 239,936
Int. Cl.³ G01L 7/04
U.S. Cl. 73—711 **11 Claims**



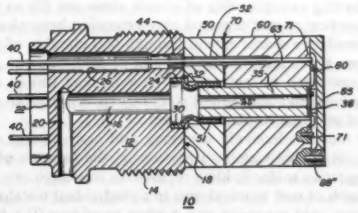
1. In a gauge instrument including a Bourdon tube, an amplifier adapted to transmit displacement motion of the Bourdon tube to an output drive and an elongated actuator pin extending from between a first end secured to a support and a second end interacting with the amplifier for enabling operational motion of the amplifier in response to displacement changes incurred by the Bourdon tube, calibration apparatus comprising clamp means mounted on said actuator pin intermediate its ends and settable for imposing a controlled bend in said pin offsetting the second end thereof from a plane of the unbent pin thereat.

4,361,047

DIFFERENTIAL PRESSURE TO ELECTRICAL SIGNAL TRANSDUCER

Raymond F. McMullen, Minneapolis, and David B. Wamstad, Roseville, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 30, 1981, Ser. No. 248,134
Int. Cl.³ G01L 9/06
U.S. Cl. 73—721 **5 Claims**



1. A differential pressure to electrical signal transducer comprising:
(a) a header or base member having attachment means on an outer surface thereof to facilitate connection of said header member to a meter body or housing member, said header having a centrally located longitudinal pressure

port bore extending from a first end face thereof to a radial bore which extends from said longitudinal bore to said outer surface adjacent to a second end face thereof, said header having a circular recess in said first end face concentrically with said pressure port bore, and said header having a plurality of longitudinal extending terminal pin bores extending from said first end face to said second end face and spaced from said pressure port bore;

(b) a circular shaped hollow metal sleeve member having a first end positioned in said circular recess and hermetically bonded to said header and a second end adopted to receive a cylindrically shaped member;

(c) a round cylindrically shaped axially elongated glass tubular member having its circumferential surface adjacent a first end thereof metalized and a thin wafer-like semiconductor die hermetically attached to the other end thereof, said metalized end of said tubular member being inserted into said second end of said sleeve member and hermetically attached thereto, and said semiconductor die having (i) a centrally located pressure responsive portion positioned in register with the hollow bore of said tubular member and (ii) a plurality of electrical circuit elements on a face thereof adapted to be connected to external circuit means;

(d) a plurality of elongated metal terminal pins positioned in said plurality of terminal pin bores of said header and held in rigid hermetically sealed relationship with said header by insulative means, said pins extending beyond both of said end faces of said header member;

(e) a first insulative cylindrically shaped spacer having (i) a central circular bore larger in diameter than the outer diameter of said second end of said sleeve, and (ii) a plurality of longitudinally extending terminal pin bores, said first spacer being loosely fitted over said terminal pins extending beyond said first end face of said header member and said second end of said sleeve;

(f) a second insulative cylindrically shaped spacer having (i) an outer diameter substantially the same as the outer diameter of said first insulative spacer, (ii) a central bore sized larger than the outer diameter of said glass tubular member, and (iii) a plurality of longitudinally extended terminal pin bores spaced from said central bore, said terminal pin bores terminating at a first axial end face of said second cylindrically shaped spacer with (i) a reduced diameter sized to snuggly embrace said terminal pins, and (ii) conical solder holding recesses formed in said first axial end face, said end face having thereon a plurality of metalized portions including and surrounding each of said plurality of said solder holding recesses, and said second insulative spacer being assembled with elements (a) to (e) above by being positioned axially adjacent to an end face of said first insulative spacer and further (i) so that said central bore thereof encompasses concentrically said glass tubular member, the axial length of said second spacer being such that, after said assembly, said first axial end face thereof is in substantial planer register with said face of said die having said plurality of circuit elements, (ii) so that the portion of said terminal pins extending beyond said first insulative spacer extend through said plurality of terminal pin bores thereof and the end of said terminal pins are positioned in said conical recesses, and (iii) so that the second end face thereof is slightly spaced from an end face of said first insulative spacer;

(g) means selectively soldering said ends of said terminal pins to said metalized portions at the location of the respective solder holding recess so as to electrically connect each of said terminal pins to an individual metalized portion, said soldering step further providing (i) a hermetic seal between each terminal pin and said second insulative spacer, and (ii) a rigid mechanical connection between said terminal pins and said second insulative spacer so that, inter alia, said metalized portions are held in substantially fixed axial relationship with said plurality of electrical circuit elements of said semiconductor die; and

(h) flexible lead means interconnecting said metalized portions and said plurality of circuit elements; and cover means including Faraday shield means attached to said first axial end face of said second spacer, said cover means having aperture means therein to permit the flow therethrough of fluid so as to impinge against said pressure responsive portion of said semiconductor die.

4,361,048

POINTER INSTRUMENT MOVEMENT

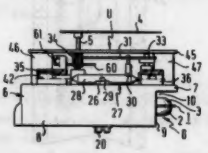
Johann Hüttinger, Deggendorf, Fed. Rep. of Germany, assignor to Helmut Bernhardt GmbH u. Co. KG, Metten, Fed. Rep. of Germany

Filed Dec. 8, 1980, Ser. No. 214,213

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1979, 2940969

Int. Cl.³ G01L *7/12*

U.S. Cl. 73—729 **15 Claims**



1. A pointer instrument movement comprising:

(a) a chassis of integrally moulded plastic having a planar partition with a cutout formed therein,

(b) a lifting member, responsive to air pressure changes

(c) a measured value pickup for converting changes of a measured quantity to a mechanical deflection of said lifting member, said measured value pickup being mounted on one side of said partition so that said lifting member faces said partition and said mechanical deflection is directed substantially perpendicularly to said partition,

(d) a pointer shaft mounted on the other side of said partition perpendicular thereto,

(e) a measured value transducer for converting the mechanical deflection of said measured value pickup into a rotation of said pointer shaft, and

(f) a rocker in said cutout forming a member of said measured value transducer, one end of said rocker being mounted pivotably on said partition and about an axis parallel to said partition, the other end of said rocker being operably mounted on said lifting member such that the mechanical deflection is transmitted to said rocker, said rocker being formed of plastic integrally with said chassis and said pivot axis of said rocker being formed by an integrally moulded portion of reduced cross-section.

4,361,049

APPARATUS FOR CALCULATING CARDIAC OUTPUT

George A. Volgyesi, Willowdale, Canada, assignor to The Hospital for Sick Children, Toronto, Canada

Filed Aug. 18, 1980, Ser. No. 179,341

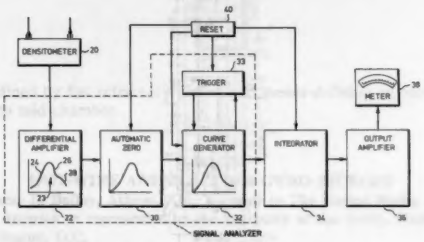
Int. Cl.³ G01P *5/18*; A61B *5/02*; H01J *40/14*

U.S. Cl. 73—861.05 **3 Claims**

1. Apparatus for measuring the flow rate of liquid being circulated in a closed system by a pump using a bolus of indicator injected suddenly into the system upstream of the pump and a sampling station downstream of the pump, the apparatus comprising:

signal means for location at the sampling station and adapted to provide an electrical signal proportional to the concentration of the indicator passing said station, the electrical signal having an increasing portion followed by a decaying exponential portion and a distorted portion caused by recirculation of the indicator;

a signal analyzer coupled to said signal means to receive said electrical signal and adapted to provide a continuous output during the whole of said electrical signal corresponding to said increasing portion and said decaying exponential portion and including an extrapolated exponential portion replacing said distorted portion of the signal, said signal analyzer including: means to automatically zero said signal on a time base; a curve generator for receiving said signal from the zeroing means, said curve generator including a capacitor which is charged by said signal while the signal is increasing, said curve generator being adapted to continuously compare the charge on said capacitor with said signal and to permit said capacitor to discharge exponentionally after said signal has reached a



peak, at a rate matched to the decay rate of the electrical signal; said discharge rate continuously following said signal exponential decay rate and trigger means coupled to said curve generator and responsive to the charge on said capacitor, said trigger means being adapted to isolate the curve generator from said electrical signal when said charge on said capacitor has fallen to a predetermined level corresponding to a time during said exponential portion of said electrical signal and in advance of said distorted portion, whereby said signal analyzer output thereafter decays exponentially without interference from said distorted portion of the electrical signal; and,

integrator means receiving said continuous signal analyzer output and adapted to integrate said output and provide a reading of the flow rate of the liquid.

4,361,050

DEVICE FOR MEASURING THE FLOW RATE OF A FLUID AND AIR FLOW SENSOR SYSTEM IN AN INTERNAL COMBUSTION ENGINE UTILIZING SUCH A DEVICE

Gerard Coussot, and Pierre Hartemann, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Oct. 9, 1980, Ser. No. 195,623

Claims priority, application France, Oct. 12, 1979, 79 25467

Int. Cl.³ G01F 1/38

U.S. Cl. 73—861.47 **9 Claims**

1. A device for measuring the flow rate of a fluid flowing in a pipe having an upstream portion with an upstream pressure and a downstream portion with a downstream pressure, said device comprising:

a body member connected to said pipe;

means for creating a differential pressure between said upstream pipe portion and said downstream pipe portion disposed within said body member and integral with said body member wherein said body further comprises a flow channel formed within said body member for fluidly communicating said upstream pipe portion with said downstream pipe portion;

first pressure intake means fluidly communicating with said communication channel upstream from said differential pressure means;

second pressure intake means fluidly communicating with said communication channel downstream from said pressure differential means;

a pressure sensor connected to said body member, wherein said pressure sensor further comprises;

a piezoelectric plate in contact with an outer surface portion of said body member and rigidly fixed thereto;

a first active elastic surface wave oscillator disposed on said piezoelectric plate;

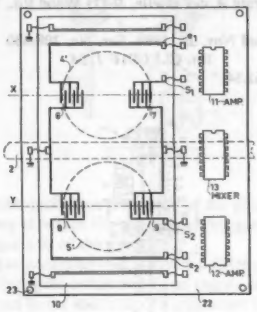
a second active elastic surface wave oscillator disposed on said piezoelectric plate proximate to said first elastic surface wave oscillator;

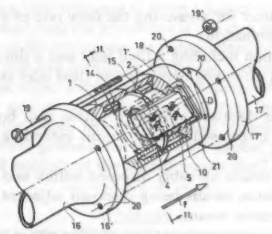
a first amplifier operatively associated with said first oscillator;

a second amplifier operatively associated with said second oscillator;

a first delay line for propagating elastic surface waves operatively associated with said first oscillator;

a second delay line for propagating elastic surface waves operatively associated with said second oscillator;





a first pair of electromechanical split-finger transducers operatively associated with said first oscillator and disposed on a first portion of the outer surface of said piezoelectric plate upstream from said differential pressure means;

a second pair of electromechanical split-finger transducers operatively associated with said second oscillator and disposed upon a second portion of the outer surface of said piezoelectric plate downstream from said differential pressure means;

means for exposing a first inner surface portion of said piezoelectric plate to said first pressure intake means located radially within said first portion of said outer surface of said piezoelectric plate;

means for exposing a second inner surface portion of said piezoelectric plate to said second pressure intake means, said means for exposing said second inner surface portion being disposed radially within said second surface portion of said outer surface of said piezoelectric plate such that changes between said upstream pressure and said downstream pressure modify the propagation time of said elas-

tic surface waves over said first delay line and said second delay line, respectively, and wherein said first and said second elastic surface wave oscillators generate respective first and second signals dependent upon said upstream pressure and said downstream pressure, respectively; and

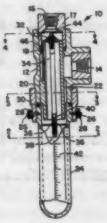
a mixer for receiving said first and second signals and for generating an output beat frequency equal to the difference between said first and second signals.

4,361,051

FLOWMETER

Robert J. deFasselle, Timberridge Trail, Gates Mills, Ohio 44040, and Craig R. deFasselle, 38411 Wood Rd., Willoughby, Ohio 44094

Filed Nov. 20, 1980, Ser. No. 208,630
Int. Cl.³ G01F *1/24*
U.S. Cl. 73—861.54 **5 Claims**



1. A flowmeter for measuring the flow rate of a fluid, comprising in combination:

a body portion including a fluid inlet and a fluid outlet;

a fluid path extending between said fluid inlet and said fluid outlet;

a core tube disposed vertically within said body portion defining a recessed groove means extending along said core tube;

first piston means movably disposed within said core tube;

said first piston means being disposed adjacent to said recessed groove means;

said recessed groove means and said first piston means defining therebetween a cross-sectional area of said fluid path;

said cross-sectional area of said fluid path being variable dependent upon the longitudinal disposition of said first piston means relative to said recessed groove means;

a cover tube disposed adjacent said body portion and in fluid communication with said fluid path;

a second piston means movably disposed within said cover tube;

means connecting said second piston means to move in unison with said first piston means;

said second piston means being immersed in static fluid in said cover tube enabling said static fluid to be disposed on a first and a second side of said second piston means;

aperture means in said second piston means for enabling controlled fluid flow through said aperture means upon movement of said first piston means for damping the movement thereof; and

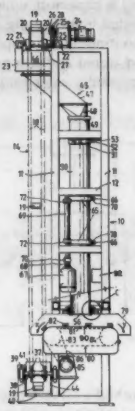
an indicator means cooperating with said second piston means for indicating the position thereof relative to said cover tube to indicate the fluid flow rate between said fluid inlet and said fluid outlet.

4,361,052

SAMPLING OF GRANULAR MATERIAL FOR ANALYSIS

Robert W. Nicol, Kenmore; Martin Gottschall, Jindalee, and Geoffrey Lyman, Taringa, all of Australia, assignors to The University Of Queensland, St. Lucia, Australia

Filed Nov. 25, 1980, Ser. No. 210,346
Claims priority, application Australia, Nov. 26, 1979, PE1482
Int. Cl.³ G01N *1/00*
U.S. Cl. 73—863 **13 Claims**



1. A method of conveying granular material through a sampling tube for analysis including the steps of:

(a) feeding granular material to the sampling tube;

(b) subjecting the sampling tube to oscillations to reduce the frictional force between the granular material and the wall of the sampling tube to enable the granular material to pass through the tube with substantially no pressure gradient or bulk density gradient, wherein the velocity and amplitude of the oscillations are selected such that the vertical vector component of the frictional force on an elemental disc of granular material in the bulk of the material is equal to or just less than the weight of the elemental disc so that the vertical velocity of the elemental disc is substantially constant; and

(c) discharging the granular material from the sampling tube.

4,361,053

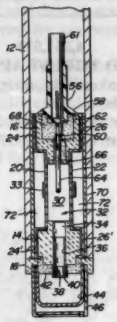
MOLTEN METAL BATH TEMPERATURE SENSOR AND SAMPLER

Gregory W. Jones, Jenkintown, and L. Raymond Jones, Jr., Huntingdon Valley, both of Pa., assignors to Electro-Nite Co., Philadelphia, Pa.

Filed Nov. 13, 1980, Ser. No. 206,214
Int. Cl.³ G01N *1/10*
U.S. Cl. 73—864.53 **14 Claims**

1. Molten metal sampling apparatus comprising a body have two sections, means rigidly interconnecting said sections, said means including two metal plates arranged to define opposite

side walls of a sampling chamber located between said sections with two remaining walls of said sampling chamber being



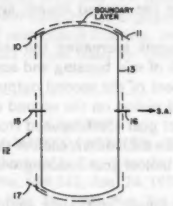
defined by flat refractory plates, and means defining an entry into said chamber.

4,361,054

HOT-WIRE ANEMOMETER GYRO PICKOFF

Escar L. Bailey, Athens, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 5, 1980, Ser. No. 213,522
Int. Cl.³ G01C *19/28*
U.S. Cl. 74—5.6 D **6 Claims**



1. In a system for measuring movement of a rotating means which has a boundary layer of flowing fluid about its rotating surface, the improvement comprising a nonlinear resistor having a length which is long in comparision to its diameter; circuit means connected to said resistor so as to cause current flow through said resistor and to cause said resistor to increase in temperature; said resistor being placed relative to said rotating means such that only a portion of said resistor will be in said boundary layer; when said rotating means moves relatively to said resistor, a different proportion of said resistor will be within said boundary layer; said nonlinear resistor being such that the more of the resistor that is located within the boundary layer, the more the resistor is cooled; and measurement means connected to said resistor to sense the amount of cooling of the resistor, and therefore, the amount of motion of said rotating means relative to said resistor.

4,361,055

TORQUE CONVERTER

Robert Kinson, Mattydate, N.Y., assignor to Juris Murnieks, Syracuse, N.Y.

Filed May 19, 1980, Ser. No. 151,381
Int. Cl.³ F16H *33/10*
U.S. Cl. 74—5.22 **29 Claims**

1. The method of transmitting energy from a prime mover to a loaded output shaft that includes the steps of

mounting a gyroscope within a gimbal unit with the precessional axis of the gyroscope being coaxially aligned with a central axis of the gimbal unit,

turning the wheel of the gyroscope at a relatively high speed to create inertial forces in the gyroscope,

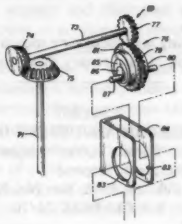
connecting the spin axis of the gyroscope to the output gear of a differential drive unit,

connecting the input gear of the differential drive unit to the prime mover,

meshing a planetary gear section to the input and output gears of the differential drive unit and coupling the section to the loaded output shaft,

rocking one ring of the gimbal to oscillate the gyroscope about a torque axis that is perpendicular to the precessional axis whereby a precessional force is applied to the output gear of the differential,

turning the entire gimbal about the precessional axis, and



matching the oscillation frequency of the gimbal ring to the frequency at which the spin axis of the gyroscope crosses the torque axis of the gimbal.

28. A torque converter that includes a differential drive unit having an input gear connected to an engine shaft, an output gear connected to the spin axle of a gyroscope having a wheel capable of being rotated at relatively high speeds and a planetary section for connecting the input and output gears that contains a ring gear arranged to drive a loaded output shaft, a gimbal for supporting the gyroscope in one ring thereof so that the spin axle of the gyroscope can independently turn about its precessional axis and oscillating means for rocking the ring of the gyroscope about a torque axis that is perpendicular to the precessional axis of the gyroscope at a rate that is a fixed multiple of the prime mover speed, and means to turn the gimbal about the precessional axis of the gimbal at a rate that is some fixed multiple of the loaded output shaft speed.

4,361,056

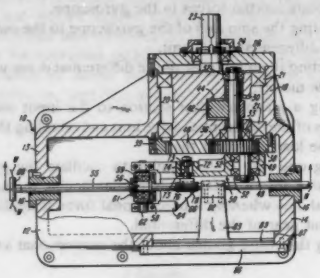
APPARATUS FOR PRODUCING COMPOUND AXIAL AND ROTARY MOVEMENT OF A SHAFT

Robert D. George, Dayton, Ohio, assignor to Mechaneer, Inc., Dayton, Ohio

Filed Apr. 23, 1980, Ser. No. 256,799
Int. Cl.³ F16H *37/16*; B65H *81/06*
U.S. Cl. 74—25 **13 Claims**

1. Apparatus for producing compound axial and rotary movement of a shaft and adapted for winding wire coils within a motor stator, comprising an elongated shaft, means supporting said shaft for both axial and rotary movement, a crank arm, pivot means connecting said shaft to a first portion of said arm and providing for rotation of said shaft relative to said arm and pivotal movement of said arm relative to said shaft, rotary drive means adapted to be driven by a motor, means connecting said rotary drive means to a second portion of said arm and providing for orbital movement of said second portion of said arm along a predetermined orbital path, said crank arm and said pivot means being effective to reciprocate said shaft axially in response to movement of said second portion of said arm along said orbital path, and gear means connecting said shaft to a third portion of said arm and being effective to

oscillate said shaft in response to movement of said second portion of said arm along said orbital path to provide for simultaneous reciprocating and oscillating movement of said shaft in response to rotation of said rotary drive means.

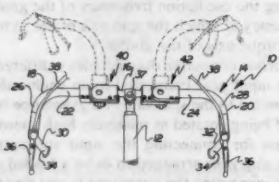


4,361,057

HANDLEBAR ADJUSTING DEVICE

Peter G. Kochera, Parma, Ohio, assignor to John Sigan, Strongsville, Ohio, a part interest

Filed Feb. 28, 1980, Ser. No. 125,679
Int. Cl.³ B62K *21/16*
U.S. Cl. 74—551.4 **16 Claims**



1. A handlebar comprising:

a central handlebar portion having opposite attachment ends;

an end portion associated with each of the attachment ends of said central handlebar portion, each end portion having an attachment end and a free end;

first coupler members attached to the opposite attachment ends of the central handlebar portion, each of said first coupler members having locking means for cooperating with the locking means of another coupler member;

a second coupler member for cooperating with each of the first coupler members, said second coupler member being attached to the attachment ends of the respective end handlebar portions, each of said second coupler members having locking means for cooperating with the locking means of the cooperating first coupler members;

connecting means interconnecting said first and second coupler members for relative rotation between a plurality of predetermined positions;

retaining means operatively associated with said connecting means, said retaining means being movable between a retaining condition for selectively retaining the locking means of said first and second coupler members in a locking condition to fix the handlebar portions in selected positions, and a releasing condition for freeing the locking means to unlock said coupler members to free the handlebar portions for movement to different portions, said retaining means including:

knob means attached to said connecting means for actuating said retaining means, and

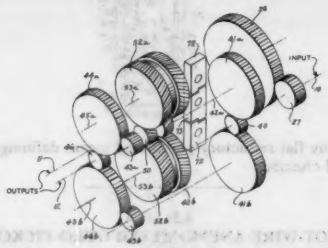
blocking means operatively connected to said knob means and movable between a blocking position for blocking said coupler members against relative movement from a locked condition, and an unblocking position for enabling relative movement of said coupler members.

4,361,058

DIVIDED THRUST APPARATUS

Ronald A. Witt, Milwaukee, Wis., assignor to The Falk Corporation, Milwaukee, Wis.

Filed May 19, 1980, Ser. No. 151,316
Int. Cl.³ F16H *37/06*
U.S. Cl. 74—665 GD **12 Claims**



6. In a gear drive having a housing including support walls, a single input shaft and a pair of parallel, closely spaced output shafts, a first gear train drivingly connecting the input shaft to one end of said output shafts, a thrust bearing on an end of said one output shaft, and a second gear train drivingly connecting the input shaft to the second output shaft, the combination therewith of:

first bearing means journaling the second output shaft in support walls of said housing and accommodating limited axial movement of the second output shaft;

a double helical pinion on the second output shaft;

a pair of parallel gear shafts spaced from both of the output shafts and from each other, each of said gear shafts mounting a double helical gear meshing with said double helical pinion;

second bearing means journaling each of the gear shafts in support walls of said housing and accommodating limited axial movement of said gear shafts; and

a pair of thrust bearings each working against an end of a respective one of said gear shafts.

4,361,059

VEHICLE TRANSMISSION

Sven-Olof Kronogard, Karstorpsvägen 31, Lomma, Sweden (S 23400)

Division of Ser. No. 148,217, May 9, 1980, which is a continuation of Ser. No. 844,079, Oct. 20, 1977. This application May 14, 1980, Ser. No. 149,761
Claims priority, application Sweden, Oct. 20, 1976, 7611617
Int. Cl.³ F16H *3/44, 57/10*
U.S. Cl. 74—759 **3 Claims**

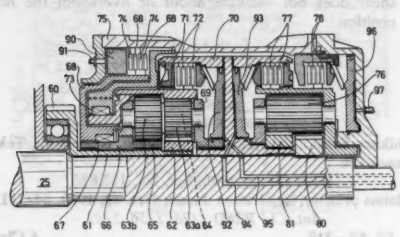
1. A vehicle transmission transferring torque from an input shaft to an output shaft by way of a planetary gearing including first, stepped planets having first and second end portions of different diameters intended for forward drive, and second planets for providing reverse drive, said gearing being enclosed in a stationary casing, and having a first planet carrier supporting said first planets and a second planet carrier supporting said second planets comprising,

said input shaft concentrically encloses said output shaft, and said first planets are mounted on said first planet carrier to travel in a circular path concentrically around said input shaft, with said second planets axially spaced from said first planets and mounted on said second planet carrier to

travel in a circular path coaxially with respect to said first planets,

a first sun wheel on said input shaft for cooperation with the first end portions of said first planets, and a gear wheel on said first planet carrier for cooperation with said second planets,

said first planet carrier comprising a planets supporting member having a substantially radially extending wall merging into an axially extending clutch housing to form first and second compartments located on opposite sides of said wall and concentrically surrounding the adjacent end portions of said first and second planets respectively,



said second planet carrier comprising a planet supporting member, a second clutch member and a second brake member, said second clutch member being adapted for engagement with said second compartment of said clutch housing, and said second brake member being adapted for engagement with said casing enclosing the gearing,

a ring gear cooperating with said first planets and carrying a first clutch member adapted for engagement with the first compartment of said clutch housing, and

a gear wheel on said output shaft for cooperation with said second planets.

4,361,060

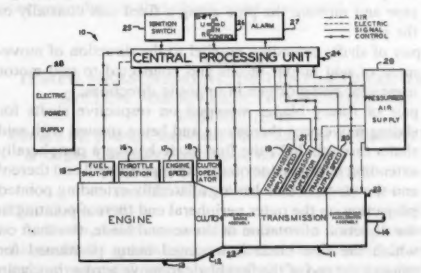
MECHANICAL AUTOMATIC TRANSMISSION

Robert R. Smyth, Morningside La., Lincoln, Mass. 01773

Continuation of Ser. No. 869,242, Jan. 24, 1978, abandoned. This application Sep. 25, 1980, Ser. No. 190,512

Int. Cl.³ B60K *41/08, 41/28*

U.S. Cl. 74—866 **65 Claims**



1. An electro-mechanical automatic transmission system for vehicles having a throttle-controlled engine, a drive shaft operably connected to ground engaging drive wheels, a mechanical transmission having a plurality of forward and reverse gear ratio combinations selectively engageable between a transmission input shaft and a transmission output shaft, said transmission output shaft connected to said drive shaft, a clutch operably connected between said engine and said transmission input shaft, and a transmission synchronizer assembly effective to synchronize the speed of transmission elements rotating with said input shaft to transmission elements rotating with said output shaft prior to engagement therewith, said automatic transmission system comprising an electronic information processing unit having means for receiving and generating a plurality of input and output signals from a plurality of input and output signals generating and receiving means, respectively, said input signal means including (1) means interconnected with the engine throttling control effective to supply an electric input signal indicating the position of said throttling control, (2) means interconnected with said engine effective to supply an electric input signal indicating the speed of said engine, (3) means interconnected with said transmission input shaft effective to supply an electric input signal indicating the speed of said input shaft, (4) means effective to supply an electric signal indicating the speed of said vehicle and (5) means interconnected with said transmission effective to indicate when said transmission is in neutral; said output signal receiving means including means for receiving (a) an electric signal effective to engage and disengage said clutch, (b) an electric signal effective to actuate said synchronizer and (c) an electric signal effective to actuate said mechanical transmission to effect engagement of one of said gear combinations, said processing unit including a memory means for storage of data indicating the direction of the previous shift, means for processing said stored data and said input signals in accordance with a program to provide a predetermined gear ratio for a given combination of current and stored input signals and for generating the output signals to cause said output signal receiving means to operate said mechanical transmission in accordance with said program.

4,361,061

MACHINE TOOL FOR DRESSING THE END FACE OF AN ENGINE CYLINDER LINER

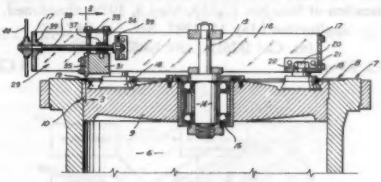
William H. Pullen, Seaforth, Australia, assignor to P. & O. Australia Limited, Sydney, Australia

Continuation of Ser. No. 79,426, Sep. 27, 1979. This application May 4, 1981, Ser. No. 259,969

Claims priority, application Australia, Oct. 4, 1978, PD6221

Int. Cl.³ B23B *5/00;* **B24B** *19/00*

U.S. Cl. 82—4 R **7 Claims**



1. A machine tool for dressing the end face of an upright engine cylinder liner, comprising:

(a) a machine base stationarily positioned within the end portion of the liner, contiguous to the end face to be dressed,

(b) an upright stub shaft mounted on said base with its longitudinal axis coincident with that of the liner, and whereof an upper end portion extends above said base,

(c) a diametrically disposed beam on the upper end of said shaft so that the beam is rotatable about said axis above said end face.

(d) means for rotating said beam about said axis,

(e) metal-dressing tool devices mounted on said beam for presentation to said end face,

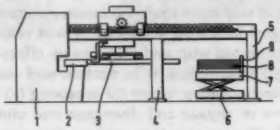
(f) a plurality of guide rollers on said beam, and

(g) said base having a circumferential runway groove within which said guide rollers ride free to rotate but engage with said base.

4,361,062
PLATE FEEDING APPARATUS FOR A SHEARING DEVICE

Harro Reiff, Leipheim, Fed. Rep. of Germany, assignor to Karl Mengele & Söhne Maschinenfabruk und Eisengiesserei GmbH & Co., Gunzburg, Fed. Rep. of Germany

Filed Feb. 10, 1981, Ser. No. 233,152
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 3010062
Int. Cl.³ B26D *5/20*
U.S. Cl. 83—71 **10 Claims**

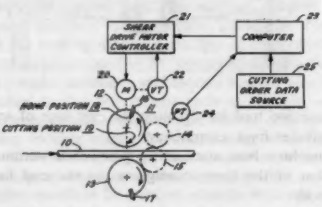


1. Plate feeding apparatus for use with a shearing device such as a device for shearing sheet metal plates, comprising a shear table, gripping means adapted to hold and introduce plates to the shearing device, a plate feeder arranged to supply plates to be cut with said plate feeder disposed in spaced relationship outwardly from said shear table, a carriage located above and extending between said shear table and said plate feeder, means for supporting said carriage, means for moving said carriage between said shear table and said plate feeder, means mounted on said carriage for lifting and holding plates, means for moving said lifting and holding means, a NC-programming circuit for controlling the movement of said means for moving said carriage and of said means for moving said holding means, wherein the improvement comprises that said lifting and holding means comprises a device mounted for rotation through 360°, and said gripping means being mounted on said carriage.

4,361,063
ADAPTIVE CONTROL FOR A DIVIDING SHEAR

Duane B. Larson, Williamsville, N.Y., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation of Ser. No. 37,553, May 9, 1979, abandoned. This application May 11, 1981, Ser. No. 262,087
Int. Cl.³ B26D *5/20*; G05B *19/20*
U.S. Cl. 83—71 **4 Claims**



1. Apparatus for controlling a dividing shear capable of cutting a moving workpiece at high speed during one or more shear operating cycles, each operating cycle causing shear starting and stopping at a home position and having a cutting position therebetween, said apparatus comprising:

(a) means for establishing each operating cycle duration and the quantity of said cycles required to make a desired number of cuts into the moving workpiece based on cutting order data;

(b) means for driving the dividing shear through the one or more shear operating cycles under control of a shear velocity feedback signal and a variable characteristic shear velocity reference signal for each operating cycle;

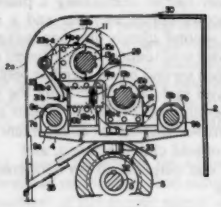
(c) first and second tachometer means for generating the dividing shear velocity feedback signal and a dividing shear position signal, respectively; and

(d) control means including means responsive to cutting order data and the shear position signal for determining the variable characteristic shear velocity reference signal starting as linear function and converting to a nonlinear function at a predetermined shear position for each operating cycle, whereby shear velocity and acceleration are always zero at the end of each operating cycle so that the shear does not oscillate about or overshoot the home position.

4,361,064
PIPE SHEARING DEVICE

Yoshikazu Sasaki, 9-1 Sakuradai 4-Chome, Nerima-ku, Tokyo, Japan 176

Filed Oct. 1, 1980, Ser. No. 192,835
Claims priority, application Japan, Oct. 11, 1979, 54/131219
Int. Cl.³ B26D *1/28, 1/56, 3/22*
U.S. Cl. 83—319 **6 Claims**



1. A pipe shearing device comprising:

a holder means mounted for lateral back and forth movement and having a cam follower thereon;

a cam means engaged by said cam follower;

a motor means connected to said cam means for driving said cam means for moving said holder means back and forth;

a clamp means mounted on said holder means for gripping a pipe and moving the pipe along a fixed axis coaxially of the pipe;

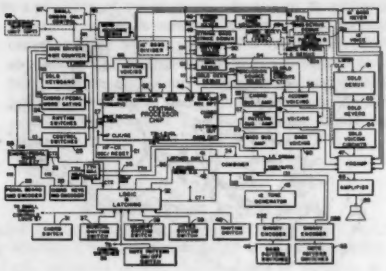
a pair of shafts extending parallel to the direction of movement of said holder means and connected to said motor means for being driven in opposite directions;

a pair of rotary blades mounted on respective shafts for sliding movement therealong and being rotated with said shafts through 360°, the first blade having a peripherally extending cutting edge on the outer peripheral end thereof and the second blade having a laterally extending pointed projection on the outer peripheral end thereof pointing in the direction of rotation of the second blade, the shaft on which the first blade is mounted being positioned for causing the end of the first blade to move across the clamp means during rotation of the first blade for forming a slit in the surface of the pipe to be sheared, and the shaft on which the second blade is mounted being positioned for causing the end of the second blade to move across the clamp means during rotation of the second blade in the same plane as said first blade and at a time subsequent to the movement of the first blade and in a direction to drive the pointed projection thereon into said slit and through the pipe for shearing the pipe; and means on said holder engaging said rotary blades for moving said blades along said shafts during movement of said holder.

4,361,065
INTEGRATED CENTRAL PROCESSOR FOR ELECTRONIC ORGAN

Brian N. Wilcox, Kettering, Ohio, and John W. Robinson, Jasper, Ind., assignors to Kimball International Inc., Jasper, Ind.

Continuation of Ser. No. 962,400, Nov. 20, 1978, abandoned.
This application Feb. 12, 1981, Ser. No. 234,001
Int. Cl.³ G10H *1/38, 1/42*
U.S. Cl. 84—1.03 **17 Claims**



1. An electronic organ comprising: a keyboard having a solo portion comprising a continuous succession of linearly arranged keys customarily played by the right hand of the performer and an accompaniment portion comprising a continuous succession of linearly arranged keys customarily played by the left hand of the performer, multiplexer means for scanning the keys of the solo portion of the keyboard and generating a plurality of concurrent synchronized parallel time division multiplexed serial data streams corresponding respectively to diverse portions of the solo portion of the keyboard and each comprising time slots corresponding on a one-to-one basis to the individual keys of their respective portion of the solo portion of the keyboard and having keydown signals in the time slots thereof corresponding to actuated keys of their respective portion of the solo portion of the keyboard, said accompaniment portion including certain keys corresponding respectively to various chords, and means responsive to the accompaniment portion of said keyboard for generating parallel format multiple bit chord words, said words corresponding on a one-to-one basis to said certain keys of said accompaniment portion of the keyboard and for placing one of the chord words on a plurality of said data streams when the accompaniment key corresponding to that chord word is actuated.

4,361,066
TEMPO MEASUREMENT, DISPLAY, AND CONTROL SYSTEM FOR AN ELECTRONIC MUSICAL INSTRUMENT

Edward M. Jones, Cincinnati, Ohio, assignor to Baldwin Piano & Organ Company, Cincinnati, Ohio

Filed Jun. 15, 1981, Ser. No. 273,788
Int. Cl.³ G10F *1/00*; G01R *23/00*
U.S. Cl. 84—1.03 **8 Claims**

1. In an electronic musical instrument having means for automatically producing a preselected rhythm accompaniment having a desired tempo, tempo control apparatus having a tempo control for setting the desired tempo, said apparatus comprising:

capacitor means;

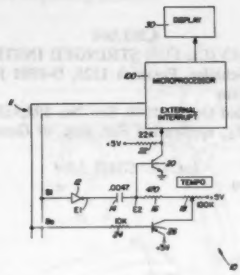
variable resistor means for determining a sampling pulse width corresponding to the desired tempo, said variable resistor means being connected between said capacitor means and a source of voltage, said variable resistor means also being adjustable by the tempo control;

means for causing said capacitor means to begin charging at a rate determined by the setting of said variable resistor means;

pulse width measuring means for measuring the period of time after said capacitor means begins charging at the rate determined by the setting of said variable resistor means until the voltage on said capacitor means reaches a predetermined value;

means for causing said capacitor means to begin charging at a rate determined by the maximum setting of said variable resistor means;

maximum pulse width measuring means for measuring the period of time after said capacitor means begins charging



at the rate determined by the maximum setting of said variable resistor means until the voltage on said capacitor means reaches a predetermined value; and

digital data processing means for processing the measurements made by said pulse width measuring means and said maximum pulse width measuring means and producing a count corresponding to the setting of said variable resistor means, wherein the count produced corresponds to a ratio including both measurements.

4,361,067
ELECTRONIC MUSICAL INSTRUMENT WITH KEYBOARD

Hiroshi Ishii, Tachikawa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 4, 1980, Ser. No. 213,089
Claims priority, application Japan, Dec. 19, 1979, 54-165266
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.27 **10 Claims**

1. An electronic keyboard musical instrument comprising:

a keyboard having a plurality of multifunction performance keys;

memory means coupled to said keyboard and including means for previously storing a single series of note codes;

control means including function setting means for setting a function for predetermined multifunction performance keys on said keyboard as note code reading instruction keys for enabling reproducing of tones of the note codes previously stored in said memory means upon operation of

said keys set as said note code reading instrumentation keys; and

means coupled to said control means for setting different volume levels to reproduced tones as a function of the arrangement of the performance keys set as said tone code reading instruction keys.

4,361,068

BRIDGE DEVICE FOR STRINGED INSTRUMENT

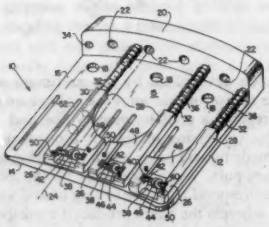
Helmut F. K. Schaller, Postfach 1225, D-8501 Feucht 1, Fed. Rep. of Germany

Filed Oct. 1, 1980, Ser. No. 192,933

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1980, 3029951

Int. Cl.[3] G10D *3/04*

U.S. Cl. 84—299 5 Claims



1. A bridge device for guitars and other stringed musical instruments, said device comprising: a base plate adapted to be fixed to an instrument, said base plate including a forward portion with a top surface and a tailpiece located at the rear of said forward portion and extending upwardly beyond said top surface thereof, a plurality of pedestals located side-by-side above said top surface and spaced from one another crosswise thereof, each of said pedestals having a longitudinally extending recess in its upper portion located laterally in the middle thereof so as to define two side ribs on opposite sides thereof, said tailpiece for each of said pedestals having two openings spaced from one another crosswise of said top surface, and a plurality of longitudinal adjustment screws, each of said longitudinal adjustment screws passing through one of said two openings in said tailpiece associated with an associated one of said pedestals and threadably received by one of said ribs of said associated pedestal for adjustably longitudinally positioning said pedestal relative to said base plate in response to rotation of said longitudinal adjustment screw, the other of said two tailpiece openings associated with each pedestal serving to receive an associated string, each of said pedestals having adjacent its forward end a screw carried by and extending between its two side ribs, said second screw of each of said pedestals threadably receiving a roller having a circumferential groove for receiving a string associated with said pedestal whereby said roller may be adjusted crosswise of said string in a direction generally parallel to said base plate top surface by rotating it relative to said second screw, each of said pedestals further having a pair of third screws threadably engaged respectively with said side ribs of said pedestal with their axes generally perpendicular to said base plate top surface and with their lower ends engaging said top surface, said top surface of said base plate including a plurality of elongated grooves extending longitudinally of said base plate with each of said grooves receiving the lower end of a respective one of said third screws.

4,361,069

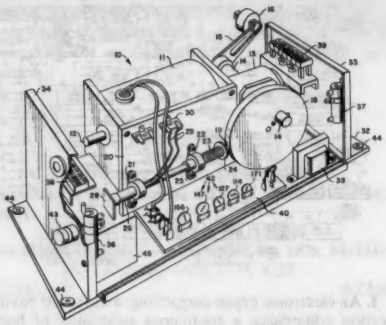
ELECTRONICALLY CONTROLLED SWELL SHUTTER OPERATOR FOR PIPE ORGANS

Richard H. Peterson, 11748 Walnut Ridge Dr., Palos Park, Ill. 60464, and James A. Mornar, Crestwood, Ill., assignors to Richard H. Peterson, Palos Park, Ill.

Filed Sep. 23, 1980, Ser. No. 189,999

Int. Cl.[3] G10B *3/16*

U.S. Cl. 84—346 16 Claims



1. An electronically controlled swell shutter operator for pipe organs, comprising:

drive motor means;

operator means responsive to the operation of said drive motor and adapted to drive a swell shutter;

first variable voltage means responsive to the position of said operator means, said first variable voltage means comprising a photocell having a resistance value proportional to the rotational position of said operator means for producing a first signal indicating the position of the swell shutter;

means for producing a second signal indicating a desired position for the swell shutter;

electronic circuit means including a plurality of integrated circuit comparators for sensing the magnitude and the direction of any imbalance between said first and second signals and for producing comparator output signals; and

logic circuit means responsive to said comparator output signals for operating said drive motor in a selected direction at a selected speed to cause said drive motor to drive the swell shutter to the desired position.

4,361,070

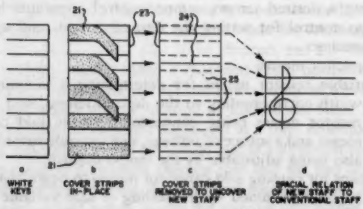
METHOD AND APPARATUS FOR MUSIC INSTRUCTION ON A BARRED OR KEYBOARD INSTRUMENT

Tona L. Huiner, 530 Lafayette Ave., Buffalo, N.Y. 14222

Filed Jun. 4, 1981, Ser. No. 270,502

Int. Cl.[3] G09B *15/02*

U.S. Cl. 84—478 7 Claims


WHITE KEYS
COVER STRIPS IN PLACE
COVER STRIPS REMOVED TO UNCOVER NEW STAFF
SPACIAL RELATION OF NEW STAFF TO CONVENTIONAL STAFF

1. A teaching device for teaching the relationship between

musical notes on a staff and the keyboard of a keyboard or a barred instrument, said device comprising:

(a) an elongated base member having a planar surface and including a plurality of spaced, parallel lines on said planar surface extending transversely of the longitudinal axis of said base member, said lines depicting at least one musical staff, said lines being spaced a distance substantially corresponding to the width of two tone-producing elements of the instrument which are contacted by the user and with which the apparatus is intended to be used; and

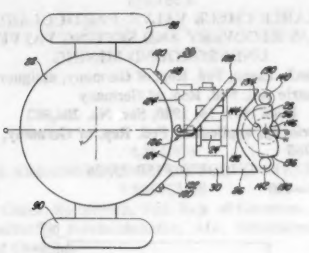
(b) a plurality of cover strips adapted to be releasably attached to said base member having a width substantially corresponding to the width of a single tone-producing element of the instrument, said cover strips covering a portion of the planar surface of said base member in overlying relationship to said lines to provide alternating and parallel covered and uncovered areas of substantially equal width.

4,361,071

FIRE CONTROL MECHANISM

Donald J. Carlson, Troy; Martin J. Neumeyer, Utica; Glenn O'Rourke, Lake Orion, and Roger K. Waid, Rochester, all of Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 22, 1980, Ser. No. 189,980
Int. Cl.³ F41F *3/04*
U.S. Cl. 89—1.815 **10 Claims**



1. In a fire control system for a combat vehicle having a rotatable turret:

a. a traversing unit carried by the turret, mounted for pivoting about an axis substantially parallel to the axis of rotation of the turret, said unit adapted to carry an optical sighting device;

b. a force transducer carried by the traversing unit;

c. a force transfer arm carried by the force transducer, the arm being bifurcated to form two opposed branches;

d. a stop on each of the bifurcation branches;

e. a two-position cam having opposed engaging surfaces pivotably mounted on the turret on an axis substantially parallel to the axis of rotation of the turret and between the two stops, whereby positioning of the cam with its engaging surfaces in contact with said stops locks the traversing unit against pivoting about its axis and positioning of the cam with its engaging surfaces between the stops permits such pivoting;

f. and means to pivot the cam from one position to the other.

4,361,072

AUTOMATIC HAND FIREARM

Tore Karlsen, P.O. Box 78, 2280 Gjesasen, Norway

Filed Aug. 25, 1980, Ser. No. 180,908
Claims priority, application Norway, Aug. 27, 1979, 792770
Int. Cl.³ F41D *11/02*
U.S. Cl. 89—154 **3 Claims**

1. An automatic hand firearm comprising:

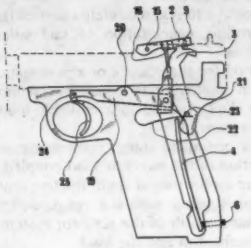
a frame;

a barrel mounted on the frame;

a slide or bolt mounted on said frame rearwardly of said barrel for movement longitudinally with respect to said barrel, said slide having a bore formed therein in which a firing pin is movably located;

a hammer pivotally mounted in said frame adapted to pivotally move to a position wherein it impacts against the firing pin;

a spring member located in said frame having a portion acting against said hammer to continuously bias the latter toward the impacting position;



a hammer pawl member pivotally mounted on said slide or bolt in overlying relationship to said hammer, said pawl member including means for engaging said hammer;

means for biasing said pawl member in the direction of said hammer; and

lever means for pivoting said hammer pawl member away from said hammer upon actuating a trigger member;

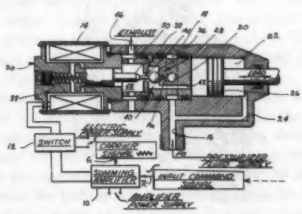
whereby said spring member exerts a force on the bolt or slide through said hammer and hammer pawl member which tends to brake said slide or bolt when it moves rearwardly under a recoiling action and which retains the hammer in a cocked position prior to firing of the weapon.

4,361,073

SUB-CRITICAL TIME MODULATED CONTROL MECHANISM

John A. Oelrich, Avon, and Albert J. Divigard, Waterbury, both of Conn., assignors to Chandler Evans Inc., West Hartford, Conn.

Filed Mar. 18, 1974, Ser. No. 452,050
Int. Cl.³ F15B *13/044*
U.S. Cl. 91—47 **5 Claims**



1. A time modulated fluid actuated control apparatus comprising:

housing means, said housing means defining a cylinder;

actuator piston means disposed in said housing means cylinder, said piston means including an output member adapted to be connected to a movable load, said load and control apparatus defining a system having a range of resonant frequencies;

solenoid operated valve means mounted on said housing

means, said valve means being selectively operable to deliver pressurized fluid to and to vent fluid from said housing means cylinder at one side of said piston means;

means for generating variable input command signals commensurate with the desired position of the load, said command signals being characterized by a dynamic frequency range below said range of said resonant frequencies;

means for generating a signal at a carrier frequency, said carrier frequency being greater than the maximum dynamic command signal frequency and less than the minimum system resonant frequency;

means for modulating said carrier frequency signal by said command signal; and

means responsive to said modulated carrier frequency signal for controlling energization of said solenoid operated valve means.

2. The method for the control of a pneumatic position control mechanism employing an expansible chamber motor having an output shaft coupled to a movable load, said method comprising the steps of:

generating a command signal commensurate with the desired position of the movable load coupled to the control mechanism motor output shaft, the frequency of the command signals being within a range determined by the primary band width of the actuator system including the control mechanism and the load;

generating a carrier signal at a frequency less than the minimum resonant frequency of the actuator system and greater than the maximum command signal frequency;

modulating the carrier frequency signal with a command signal;

and

controlling the delivery of pressurized gas to the position control mechanism expansible chamber motor in accordance with the magnitude of the modulated carrier frequency signal.

4,361,074

HYDROMECHANICAL AUTOMATIC REVERSING DEVICE FOR LINEAR HYDRAULIC RAMS

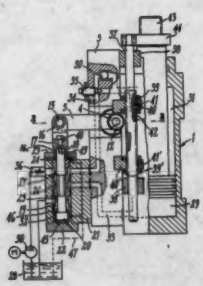
Jacques Agiman, 58 bis, bd Victor Hugo, 92200 Neuilly sur Seine, France

Filed Apr. 8, 1980, Ser. No. 138,426

Claims priority, application France, Apr. 9, 1979, 79 08891

Int. Cl.³ F01B *7/18;* F01L *31/00*

U.S. Cl. 91—279 12 Claims



1. A hydromechanical apparatus comprising:

a hydraulic machine including a ram body and a ram piston movable in opposite linear directions in said ram body;

a support block mounted on said ram body;

ram distributor valve means, including a spool movable in opposite linear directions, operatively connected to said hydraulic machine for, upon movement of said spool in opposite linear directions, reversing the direction of movement of said ram piston within said ram body;

a pendular arm having first and second ends, said first end being pivotally connected to said spool, said second end supporting a pivot shaft journalled in said support block and an extension positioned eccentric to said pivot shaft;

a rod rigid with and extending parallel to and laterally spaced from said ram piston and movable therewith in opposite linear directions;

a pair of adjustble rigid stop means carried by said rod for, upon movement of said ram piston in opposite linear directions, engaging said extension, thereby rotating said pendular arm in opposite directions about said pivot shaft and causing movement of said spool in opposite linear directions, thus causing said ram distributor valve means to reverse the direction of movement of said ram piston within said ram body;

the dimensions of said pendular arm, between said extension and said pivot shaft and between said pivot shaft and said first end of said pendular arm, being selected such that a relatively short stroke of said ram piston transits a highly stepped-up length and speed of stroke to said spool, thus obtaining a high degree of precision at the motion reversing positions of said ram piston and a high speed reversal of said spool of said ram distributor valve means; and

said ram distributor valve means including damping chamber means for, in cooperation with said spool, damping movement of said spool and absorbing shocks and preventing rebounds thereof.

4,361,075

UNLOCKABLE CHECK VALVE, PARTICULARLY FOR USE AS RECOVERY AND SETTING VALVE IN UNDERGROUND MINING

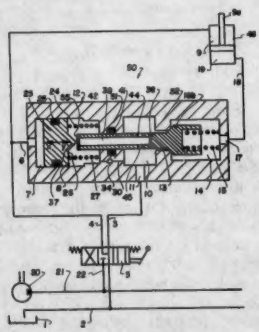
Siegmar Block, Essen, Fed. Rep. of Germany, assignor to Thyssen Industrie AG, Fed. Rep. of Germany

Filed Nov. 14, 1980, Ser. No. 206,982

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1979, 2946765

Int. Cl.³ F15B *15/26*

U.S. Cl. 91—420 6 Claims



1. An improved valve for use in underground mining in connection with a piston cylinder unit having a member slidably mounted in the bore of the cylinder for displacement responsive to fluid pressure in a first and second compartments in the cylinder on opposite sides of the member comprising

an elongated housing having a control chamber, a valve chamber, and an outlet chamber intermediate said control chamber and said valve chamber,

a piston member slidably mounted for axial displacement within said control chamber in fluid-sealing contact with said housing to divide said control chamber into a first control chamber portion and a second control chamber portion,

first spring means within said second control chamber por-

tion for resiliently biasing said piston member in a first direction toward said first control chamber portion,

first channel means for establishing fluid communication between the first compartment and said first control chamber portion,

second channel means for establishing a path of fluid communication between said second compartment and said outlet chamber through said valve chamber,

shutoff means in said valve chamber for closing said path, said shutoff means being operative responsive to the displacement of said piston member in a second direction opposite said first direction over a first predetermined distance to open said path,

connection means for establishing fluid communication between said second control chamber portion and said outlet chamber, said piston member being displaceable in said second direction over a second predetermined distance less than said first predetermined distance to shutoff fluid communication between said second control chamber portion and said outlet chamber, said connection means fluidly interconnecting said second control chamber portion and said outlet chamber when said piston member is in a neutral position disposed at a distance in said second direction less than said second predetermined distance.

4,361,076

VALVE ARRANGEMENT FOR SERVO-STEERING OF VEHICLES

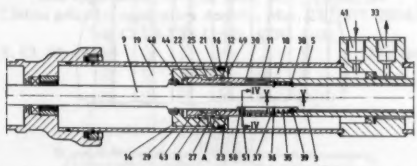
Gunther Gluck, Spraitbach, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed May 5, 1980, Ser. No. 146,316

Claims priority, application Fed. Rep. of Germany, May 11, 1979, 2919049

Int. Cl.³ F15B *9/10*

U.S. Cl. 91—422 **5 Claims**



1. For use with a vehicle steering device having a non-rotatable rack (3), a double-acting piston (14), a housing (5) within which the piston is reciprocally mounted, and a piston rod (9) attached to and reciprocable with the piston extending externally of the housing, a distributor valve for controlling the supply of pressurized fluid to the housing in response to axial movement of the rack, including a slide valve element (12) operatively connected to the rack, valve passage means (21, 22, 44) formed in the piston in operative relation to the slide valve element, prestressed spring means (35) for yieldably holding the slide valve element in a neutral position relative to the piston, and means for adjusting the neutral position of the slide valve element relative to the rack by torque applied to the piston rod externally of the housing.

4,361,077

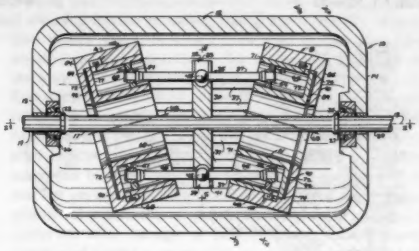
VARIABLE POSITIVE DISPLACEMENT FLUID MOTOR/PUMP APPARATUS

Ned D. Mills, West Richland, Wash., assignor to Varitan, Inc., Richland, Wash.

Filed Jun. 16, 1980, Ser. No. 160,013

Int. Cl.³ F01B *13/04, 3/00*

U.S. Cl. 91—500 **20 Claims**



1. A positive displacement fluid motor/pump apparatus, comprising:

a main housing;

a main shaft rotatably mounted within the main housing for rotation about a main axis;

two opposing annular cylinder barrels encircling the main shaft at axially spaced locations along the main axis;

each of the annular cylinder barrels having a plurality of corresponding piston cavities formed therein with each piston cavity having a fluid port communicating therewith to permit flow of fluid to and from the piston cavity;

a plurality of piston rod assemblies extending axially in opposite directions along the main shaft between the axially spaced annular cylinder barrels at angularly and radially spaced locations about the main axis;

each piston rod assembly having a piston at an end thereof projecting into a corresponding piston cavity;

means for maintaining the pistons axially stationary with respect to the main axis;

two opposing barrel carrier assemblies mounted within the main housing for receiving and rotatably supporting corresponding annular cylinder barrels at the axially spaced locations along the main shaft to enable the annular cylinder barrels to rotate in annular paths coaxially about barrel axes that intersect the main axis at the axially spaced locations along the main axis with the barrel axes and the main axis lying in a common axial plane;

said annular barrel carrier assemblies having fluid passageway means formed therein for communicating with the fluid ports of the piston cavities to permit fluid to flow through the fluid passageway means and fluid ports to and from the piston cavities;

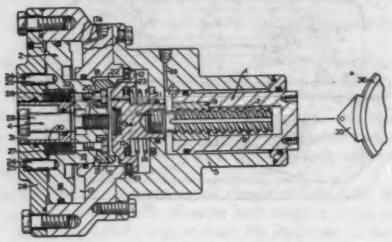
said annular barrel carrier assemblies having barrel tilting means for stationarily supporting the annular barrel carrier assemblies to prevent their rotation about the main axis and for enabling the annular barrel carrier assemblies to tilt the opposing barrels about tilt axes that transversely intersect the barrels and countersect the main axis and the barrel axis at the axially spaced locations along the main axis to cause the barrels to rotate in varying elliptical orbital paths centered with respect to the main axis to vary the axial movement of the piston cavities with respect to the axially stationary pistons as the main shaft rotates to vary the amount of fluid flowing to and from the piston cavities; and

torque transfer means operatively interconnecting the cylinder barrels and the main shaft for transmitting rotation therebetween to provide a positive displacement fluid motor/pump apparatus.

4,361,078
HYDRAULIC BRAKE ACTUATOR HAVING SPRING-APPLIED BACK-UP BRAKE WITH MANUAL RELEASE MEANS

John Cape, Caledonia, and Eric Smith, Burlington, both of Canada, assignors to WABCO Ltd., Hamilton, Canada

Filed Mar. 16, 1981, Ser. No. 243,984
Int. Cl.[3] F01B *3/04, 7/04*
U.S. Cl. 92—31 8 Claims



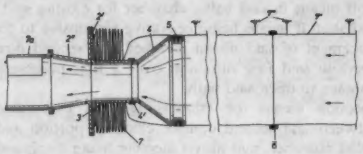
1. A brake actuator comprising:
(a) a fluid pressure operated service piston;
(b) a nut member fixedly carried on said service piston;
(c) a screw member threadedly engaged with said nut member, so as to rotate in one or the other direction relative thereto and thereby provide for axial displacement of said service piston relative to said screw member in either a brake application or brake release direction;
(d) an auxiliary piston;
(e) clutch means including a first friction member connected to said screw member and a second friction member connected to said auxiliary piston;
(f) first spring means disposed between the casing of said brake actuator and said auxiliary piston for displacing said auxiliary piston in a direction to effect engagement of said second friction member with said first friction member, whereby said screw member is prevented from rotating;
(g) said auxiliary piston being subject to fluid pressure acting thereon in a direction to oppose said spring means, whereby said first and second friction members are normally disengaged;
(h) stop means provided by the casing of said brake actuator for limiting said displacement of said auxiliary piston by said spring means, whereby said spring means is caged; and
(i) a manually operable retraction screw having threaded engagement with said second friction member and engageable with said first friction member in response to rotation in a first direction to effect disengagement of said first and second friction members in the absence of said fluid pressure acting on said auxiliary piston, whereby said spring means is effective to impart rotation to said first friction member and thereby effect displacement of said screw member in a direction to allow said auxiliary piston to engage said stop means.

4,361,079
APPARATUS FOR EXTENDING VENTILATING CONDUITS

Hans Christensen, Gelsenkirchen; Paul Schläger, Herne, and Werner Korfmann, Witten, all of Fed. Rep. of Germany, assignors to Ruhrkohle AG and Maschinenfabrik Korfmann GmbH, both of, Fed. Rep. of Germany

Filed Sep. 2, 1980, Ser. No. 183,151
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1979, 2935604
Int. Cl.[3] E21F *1/04*
U.S. Cl. 98—50 9 Claims

1. Apparatus for continuously extending ventilating conduits in response to advancement of the apparatus relative to the ventilating conduits, said apparatus including a substantially tubular store, said store having a longitudinal axis, a funnel guide releasably connected to said store, said funnel guide having an external surface and guide means including at least one sealing ring projecting outwardly from said external surface, a flexible ventilating pipe withdrawably accommodated

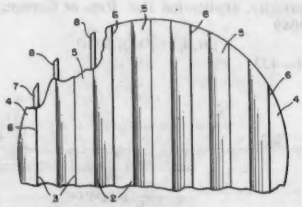


in a folded condition on said store, and fastening means for fastening said ventilating pipe to said ventilating conduit to enable said ventilating pipe to be progressively withdrawn from said store and to be extended substantially parallel to said longitudinal axis of said store and passed over said funnel guide in response to advancement of the apparatus in a direction away from the ventilating conduit.

4,361,080
FLOOR FOR LAUTERING VESSELS

David K. Smith, Leven; Nigel Harlow, Cupar, and Samuel W. Maxfield, Leven, all of Scotland, assignors to Henry Balfour & Company Ltd., Leven, Scotland

Filed Jul. 18, 1980, Ser. No. 170,230
Int. Cl.[3] C12G *1/02*
U.S. Cl. 99—277.1 1 Claim



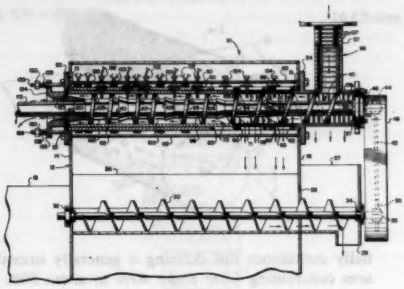
1. In a lauter tun or like vessel for containing material to be treated, the vessel having a perforated false bottom for draining liquid from the material being treated and a real floor including a discharge outlet below the false bottom for collecting the drained liquid, the improvement wherein:
(a) said real floor includes a plurality of elongated parallel linear troughs substantially identical in cross section, each of said troughs extending unobstructed across substantially the entire bottom of said vessel to facilitate access to said troughs from without said vessel for cleaning and the like,
(b) each of said troughs forms in cross section a relatively shallow, upward opening V-shape for receiving liquid draining through said perforated false bottom,
(c) the totality of said plurality of troughs is cut to the shape of said vessel to fit thereto as the bottom thereof.

4,361,081

APPARATUS FOR PROCESSING OILSEED AND GRAIN MASH PRODUCTS

James R. Howard, 1317 Edgewater Rd., Abilene, Tex. 79602

Filed Aug. 11, 1980, Ser. No. 177,214
Int. Cl.[3] A47J 27/00
U.S. Cl. 99—348 12 Claims



1. An extruder for processing material such as oilseed products, grain mash and the like and comprising:

an elongated housing including means defining a substantially continuous cylindrical bore;

inlet conduit means in communication with said bore;

means forming a discharge opening at one end of said bore;

an elongated rotatable screw conveyor disposed in said bore and including screw thread means disposed on a cylindrical shaft and forming a substantially spiral flow path for said material; and

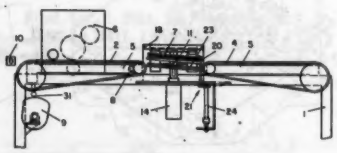
a plurality of spaced annular surfaces formed on said shaft at axially spaced gaps in said thread means and facing said one end of said bore to provide resistance to flow of material toward said inlet conduit from said one end of said bore.

4,361,082

APPARATUS FOR MANUFACTURING WAFFLE BLOCKS

Franz Haas, Sr., Gerstlgasse 25, 1210 Vienna; Franz Haas, Jr., Castellezgasse 32, 1020 Vienna, and Johann Haas, Wiener Strasse 209-215,, 2104 Spillern (NÖ), all of Austria

Division of Ser. No. 886,402, Mar. 14, 1978, Pat. No. 4,246,290.
This application Nov. 12, 1980, Ser. No. 206,148
Claims priority, application Austria, Mar. 25, 1977, 2098/77
Int. Cl.[3] A21D 13/00; A23G 3/00
U.S. Cl. 99—450.4 33 Claims



1. An apparatus for manufacturing waffle blocks having layers of waffle sheets, the waffle sheets having upper and lower sides, the apparatus comprising:

a feeder conveyor for moving waffle sheets in a downstream direction;

a cream coating device disposed adjacent said feeder conveyor for coating the upper sides of at least certain of the waffle sheets with cream prior to entry of the waffle sheets into the stacking device;

a stacking device disposed adjacent to and generally downstream of said feeder conveyor for receiving waffle sheets, at least some of which are cream coated, from said feeder conveyor for stacking the waffle sheets vertically one under the other to form a sandwich-like waffle block in which cream layers are interposed between the waffle sheets;

a run-off conveyor disposed downstream of said stacking device for receiving completed sandwich-like waffle blocks discharged from the stacking device and for transporting such waffle blocks away from the stacking device;

said stacking device including means for: vertically lifting a first waffle sheet, received from said feeder conveyor, above said feeder conveyor; for joining, by means of the stacking device, a second cream coated waffle sheet to the first waffle sheet to form at least a partial cream and waffle sandwich block by vertically lifting the second cream-coated waffle sheet, received from said feeder conveyor after receipt of said first waffle sheet, above said feeder conveyor to meet the lower side of the first lifted sheet; and for vertically lifting, if additional layers are desirous, additional cream-coated sheets, received from said feeder conveyor after receipt of said first and second sheets, above said feeder conveyor to meet the lower side of the last previously lifted sheet to provide a completed cream and waffle sandwich block; and

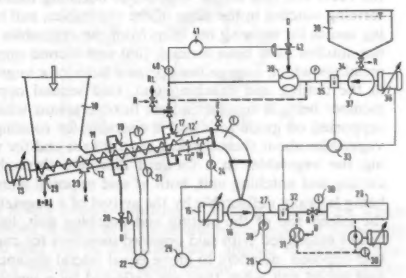
means for controlling discharge of the completed waffle blocks from the stacking device.

4,361,083

APPARATUS FOR TREATING A FOODSTUFF

Hans-Jörg Natusch, Bietigheim-Bissingen, Fed. Rep. of Germany, assignor to Societe D'Assistance Technique Pour Produits Nestle S.A., Lausanne, Switzerland

Filed Dec. 23, 1980, Ser. No. 219,862
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1979, 2952544
Int. Cl.[3] A23L 3/00; B01F 15/02
U.S. Cl. 99—483 4 Claims



1. An apparatus for mixing and heating a foodstuff of particulate material with a liquid comprising:

(a) a means for introducing particulate material;

(b) an inclined barrel extending upwardly from and in communication with the means for introducing the particulate material, said barrel terminating at an upper discharge end;

(c) a conveyor screw rotatably mounted in said barrel to convey particulate material upwardly through the barrel towards the discharge end, said conveyor screw having a plurality of screw flights including a first and last screw flight (12');

(d) a mixing zone within said barrel formed by the barrel projecting beyond the last screw flight (12'), said zone being defined by the walls of the barrel, the last screw flight (12') and the discharge end of the barrel;

(e) at least two opposing liquid inlet openings in said barrel positioned in the mixing zone; and

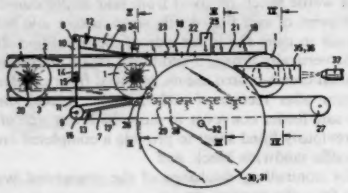
(f) a means for introducting streams of heated liquid into said liquid inlet openings such that the liquid mixes with and heats the particulate material in the mixing zone and a premix of particulate material/liquid is discharged from the discharge end of the barrel.

4,361,084

INDUSTRIAL PEELER FOR ONIONS OR THE LIKE BULBOUS AND TUBEROUS VEGETATION

Gabor J. Raatz, Generaal Foulkesweg 89, 6700 AH Wageningen, Netherlands

Filed Jan. 27, 1981, Ser. No. 228,827
Int. Cl.³ A23N *15/04, 15/08*
U.S. Cl. 99—516 **9 Claims**



1. An industrial peeler for vegetables such as onions which have skins, roots, tails and central axes which extend through the roots and tails, comprising,

an orienting unit provided with means for guiding vegetables for movement along a path at an orientation where their central axes are vertically disposed, said orienting unit including a first endless flexible means for rotating the vegetables about their vertical central axes and for moving the vegetables in a forward direction,

a cutting and notching unit having an infeed end disposed to receive vegetables from the orienting unit, said cutting and notching unit including cutting means for cutting off the roots and tails of the vegetables, notching means for forming notches in the skins of the vegetables, and blowing means for blowing the skins from the vegetables after the notches have been formed, first and second opposed members which engage the opposite sides of a vegetable in the cutting and notching unit, said second opposed member being a second endless flexible means which is supported on guide rolls and is operable for rotating the vegetables about their vertical central axes and for moving the vegetables in a forward direction through the cutting and notching unit, both of said opposed members being laterally deflectable by the arrival of a vegetable at the infeed end of the cutting and notching unit, linkage means associated with said opposed members for causing said opposed members to move equal lateral distances at said infeed end when they are deflected by a vegetable, said linkage means being operable to prevent the central axes of the vegetables from shifting laterally as they enter the infeed end of the cutting and notching unit.

4,361,085

EMBOSSING APPARATUS

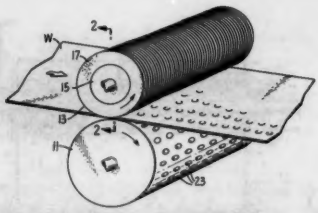
Rudolph W. Schutz, Walnut Creek, Calif., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Jun. 11, 1981, Ser. No. 272,142
Int. Cl.³ B31F *1/00*; B44B *5/00*
U.S. Cl. 101—23 **2 Claims**

1. Apparatus for embossing paper and similar web material comprising the combination of:

a rotatable embossing roll having an embossment surface defining raised projections; and

a rotatable platen roll having a grooved, deformable outer element for defining a nip with said embossing roll, said deformable outer element having a generally uniform durometer in the range of from about 40 to about 80 shore "A" and grooved to provide a plurality of spaced circular substantially continuous fins extending radially about the complete periphery of said platen roll, said fins adapted to deform under nip pressure into said grooves and to provide a yieldable platen surface conforming to the configuration of said embossing projections, said spaced substantially continuous fins defining a generally smooth land area constituting from about 40% to about 80% of the total peripheral surface of said platen roll when said platen roll is not subjected to external pressure and the depth of said grooves being in the range of from about 0.06 in. to about 0.25 in. when said platen roll is not subjected to external pressure.

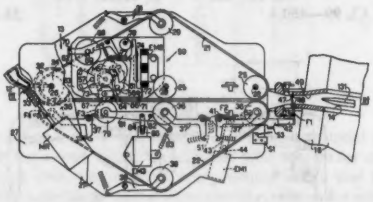


4,361,086

SERIAL PRINTER FOR OBJECTS MOVABLE IN A PREDETERMINED DIRECTION

Lucio Simonotti, Banchette d'Ivrea, and Carlo Motta, Borgofranco d'Ivrea, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Apr. 14, 1981, Ser. No. 253,915
Claims priority, application Italy, Apr. 16, 1980, 67587 A/80
Int. Cl.³ B41J *1/22*
U.S. Cl. 101—93.18 **9 Claims**



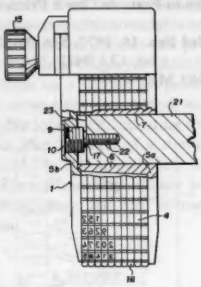
1. A serial printer for printing on objects movable in a predetermined direction, having a type carrier selectively conditionable for selecting the type to be printed and conveying means for so moving said object at a constant speed, wherein the improvement comprises urging means urging yieldably said object toward said type carrier, guiding means cooperating with said urging means for normally guiding said object to move spaced apart from said type carrier, and print command means operable at a constant rate for removing said guiding means to cause said object to be pressed by said urging means against said type carrier.

4,361,087

PRINTING POSITION ADJUSTING MECHANISM FOR PRINTERS

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato, Japan

Filed Feb. 26, 1981, Ser. No. 238,574
Claims priority, application Japan, Feb. 29, 1980, 55-25048[U]
Int. Cl.[3] B41J 1/60
U.S. Cl. 101—109 16 Claims



1. Printing position adjusting mechanism for use in a printer, wherein the printer comprises:

a platen; a yoke movable with respect to the platen toward and away from the platen, the yoke having a leading end portion with leading end faces thereon; and a printing head carried on the leading end portion of the yoke for moving together with the yoke with respect to the platen; the printing head having types supported thereon and facing toward the platen such that relative movement of the yoke toward the platen moves the types to the platen for printing an object then supported on the platen;

the printing position adjusting mechanism comprising:

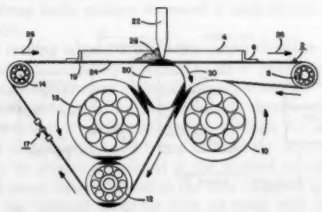
an adjusting member supported on the printing head and movable with respect thereto in directions toward and away from the leading end faces of the yoke; the adjusting member having an abutment face opposed to the leading end faces of the yoke, whereby following selected movement of the adjusting member with respect to the printing head, the printing head can be adjusted in position with respect to the yoke until the adjusting member abutment face abuts the leading end faces of the yoke.

4,361,088

APPARATUS FOR SCREEN PRINTING

Garret S. Mierzejewski, 49 Pollard St., North Billerica, Mass. 01862

Filed Apr. 2, 1981, Ser. No. 250,279
Int. Cl.[3] B41L 13/18; B05C 17/04
U.S. Cl. 101—124 6 Claims



1. In a screen printing apparatus for printing on an object having a substantially circular cross section defining a curved surface, the improvement comprising

a stencil assembly having a defined image printing area including;

a printing screen and

a frame supporting said screen,

means supporting said stencil assembly for rectilinear movement,

rotatable means for supporting the object to be imprinted, and

means responsive to an external rotational force applied to said object arranged to move said screen linearly at a velocity equal to the circumferential velocity of the surface to be imprinted comprising

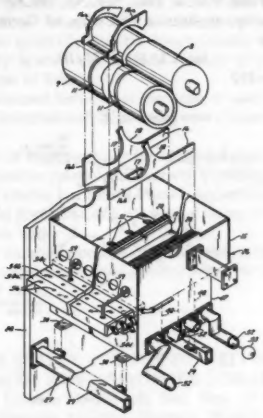
at least one elongating belt connected to said stencil assembly and in engagement with the surface of the object to be imprinted.

4,361,089

MULTI-COLOR ROTARY PRESS

Eugene W. Wittkopf, Suamico, and Dale D. Leanna, Little Suamico, both of Wis., assignors to Magna-Graphics Corporation, Oconto Falls, Wis.

Filed Oct. 20, 1980, Ser. No. 198,297
Int. Cl.[3] B41F 5/16, 13/40, 31/06, 31/36
U.S. Cl. 101—182 3 Claims



1. A rotary press comprising a printing cylinder by which impressions in each of a predetermined number of differently colored inks can be simultaneously applied to different portions of a web across the width thereof, an impression cylinder by which a lengthwise moving web is confined in printing contact with the printing cylinder, an inking cylinder from which inks are transferred to the printing cylinder and which has a plurality of sections along its length, an ink nozzle for each section from which ink can be applied to the section, an ink pan beneath the inking cylinder to receive excessive inks issuing from the ink nozzles, a plurality of ink dividers in said ink pan whereby the same is divided into compartments, one for each of said sections, and whereby ink issuing from each nozzle is prevented from mixing with inks issuing from adjacent nozzles, and a stationary frame that supports said cylinder, said nozzles and said ink pan, said press being characterized by:

A. the printing cylinder and the impression cylinder being rotatably supported on carriages which are movable on said frame to carry those cylinders for press opening and press closing motion towards and from one another and the inking cylinder;

B. the ink pan, the ink nozzles and the ink dividers being in fixed relation to said frame;

C. a plurality of elongated laterally adjacent reservoirs be-

neath said ink pan, one for each of said inks, each extending across all of said compartments in the ink pan;

D. said ink pan having a plurality of readily closeable outlets in the bottom of each of its compartments, each opening downwardly into one of said reservoirs for drainage of ink from the compartment into the appropriate reservoir;

E. a plurality of elongated, laterally adjacent ink feed manifolds, one for each of said reservoirs, each extending across all of said compartments in the ink pan and each having a plurality of lengthwise spaced readily closeable outlets, one near each of said ink nozzles, each outlet comprising a fitting that accommodates a readily removable connection between the ink feed manifold and an ink nozzle; and

F. a plurality of ink pumps, each connected to draw ink from one of said reservoirs and deliver it to the ink feed manifold for that reservoir.

4,361,090

SELECTIVE INTERMITTENT LIFTER AND FILM INKING SYSTEM FOR PRINTING MACHINES

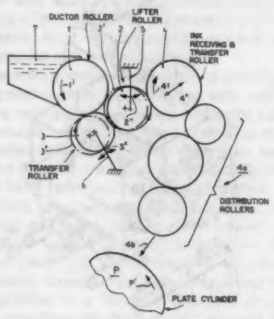
Friedrich Klingler, Kissing, and Manfred Makosch, Königsbrunn, both of Fed. Rep. of Germany, assignors to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Mar. 4, 1981, Ser. No. 240,396

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1980, 3008980

Int. Cl.³ B41F *31/10*

U.S. Cl. 101—352 **10 Claims**



1. Inking system for selective intermittent ink supply, or continuous film ink supply mode of operation, having

an ink trough (7);

a driven ink ductor roller (1) in ink receiving relationship with respect to the ink trough (7);

an ink distribution roller system including an ink receiving and transfer roller (4) and a plurality of distribution rollers (4*a*) for distributing ink and applying the ink to a plate cylinder (P) of a printing machine;

an ink lifter roller (2);

and means (5) selectively controlling engagement of the ink lifter roller (2) in accordance with the selected operating mode

(a) in strip or intermittent mode, alternate engagement of the lifter roller (2) with the ink ductor roller (1) and the ink receiving and transfer roller (4), or

(b) in film ink mode, continuous engagement with the ink transfer roller;

and comprising, in accordance with the invention,

an additional ink transfer roller (3) having a hard, texturized surface;

and means (6) selectively controlling positioning of the additional ink transfer roller (3), in accordance with the selected operating mode

(a) in strip or intermittent mode, out of engagement with said lifter roller (2) or

(b) in film ink mode, in engagement with said ductor roller (1) and said lifter roller (2).

4,361,091

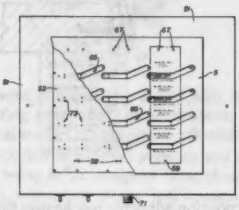
VACUUM POSITIONING SYSTEM FOR USE IN COMPOSING A PLATE FOR OFFSET PRINTING

Roy H. Pearrow, and Jack Schoenberg, both of Little Rock, Ark., assignors to Favorite Check Printers, Inc., Little Rock, Ark.

Filed Feb. 14, 1977, Ser. No. 768,220

Int. Cl.³ B41F *27/04*

U.S. Cl. 101—382 MV **6 Claims**



1. Apparatus for use in quickly and repetitively preparing a plate requiring critical accuracy for offset printing comprising a source of light, means for supporting background information sheet material in a path of illumination by said light source, means for accurately and quickly positioning said background sheet material on said supporting means, said positioning means including alignment pins as part of said supporting means to match aligned holes in said background information sheet material, means for accurately and quickly locating on such background information sheet material additional overlay information material to appear on such printing plate said locating means comprising a transparent template with accurately positioned openings for locating and positioning overlay informational material, said template having alignment holes to match said alignment pins, and means for holding said background information sheet material and such additional overlay information material in pressure engagement with said supporting means.

4,361,092

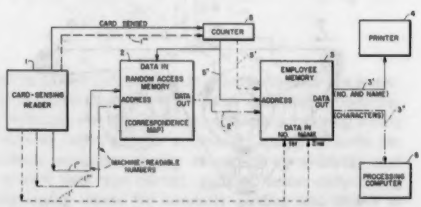
PROCESS AND APPARATUS FOR TIME CARD PREPARATION AND UTILIZATION AND THE LIKE

Lawrence J. Krakauer, Wayland, Mass., assignor to Kronos, Incorporated, Boston, Mass.

Filed Dec. 12, 1980, Ser. No. 215,845

Int. Cl.³ G06C *15/00*

U.S. Cl. 101—426 **3 Claims**



1. A process for preparing and using employee time cards and the like with the aid of an electronic clock having card-sensing, memory and printing mechanisms, that comprises, preparing a deck of time cards each having different machine-

readable identifications on the cards and for use over a predetermined time period such as a week; entering a list of employee identifications in the clock memory for reproduction in human-readable form; feeding a number of cards of the deck equal to the number of employees serially into the clock; causing the clock, as each card is fed into the same, to assign the machine-readable identification of that card to a corresponding employee identification; printing the employee identification in human-readable form on the corresponding card to customize the same for said time period; feeding the clock an additional number of cards from the deck for use in a subsequent time period to assign subsequent machine-readable identifications to corresponding employee identifications and printing the same on the cards so that the same employee identification appears in human-readable form on a second assigned card from the deck for use in such subsequent time period; and, upon having completely assigned the total deck, repeating the assignment of the machine-readable identification of a similar new deck to employee identifications to enable complete use of the decks by changing the assignment correspondence between the machine-readable identifications and the human-readable employee identifications.

4,361,093

AMMUNITION FOR SMALL ARMS

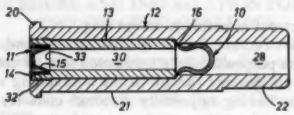
Michael E. Saxby, Norton Lindsey, England, assignor to Hilvenna Limited, England

Filed Nov. 9, 1979, Ser. No. 92,825

Claims priority, application United Kingdom, Nov. 30, 1978, 46601/78; Jul. 9, 1979, 7923875; Jul. 24, 1979, 7925833

Int. Cl.³ F42B *5/16*

U.S. Cl. 102—447 **11 Claims**



1. A round of ammunition comprising:

(a) a cartridge casing having a nose opening and a base opening at opposite ends thereof and an internal chamber extending longitudinally between said nose and base openings,

(b) the internal chamber including first and second chamber portions having different diameters and an internal shoulder at the junction of the first and second chamber portions,

(c) the first chamber portion having a larger diameter than the second chamber portion and extending from said base opening to said internal shoulder,

(d) a missile having a front body portion and a trailing edge portion and being located in said internal chamber with said front body portion disposed in said second chamber portion,

(e) said trailing edge portion being larger than the diameter of said second chamber portion to effect positioning of the trailing edge portion at said internal shoulder,

(f) a removable insert having inner and outer ends and an empty internal passage extending through the inner and outer ends thereof and being sufficiently narrow to exclude the missile positioned at the internal shoulder,

(g) said insert being located in the first chamber portion to abut the internal shoulder with its inner end and being extractable from and insertable into said first chamber portion only via said base opening, and

(h) primer means disposed to occupy at least a portion of said base opening at the outer end of the removable insert.

4,361,094

DRIVE MEMBER FOR RAIL-TYPE AMUSEMENT-RIDE CAR

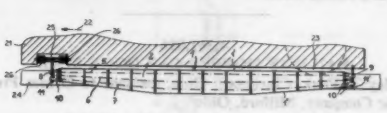
Anton Schwarzkopf, Münsterhausen, Fed. Rep. of Germany, assignor to Firma Anton Schwarzkopf Stahl- und Fahrzeugbau, Münsterhausen, Fed. Rep. of Germany

Filed Mar. 18, 1981, Ser. No. 244,956

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1980, 3043071

Int. Cl.³ B61B *13/000*

U.S. Cl. 104—168 **15 Claims**



1. In an amusement ride comprising:

rails defining a longitudinal travel direction;

a car displaceable along said rails in said longitudinal direction;

a longitudinally extending drive member having ends secured to said car; and

drive rollers transversely engageable with said member for displacing said car along said rails in said direction; the improvement wherein said member comprises:

at least two generally parallel, longitudinally extending and vertically spaced chains each formed of a longitudinal succession of links;

means connected between at least one of said ends and said car for longitudinally tensioning said chains between said ends;

a plurality of longitudinally succeeding rigid segments having respective pairs of transversely engaging halves flanking said chains, the halves of each segment being complementarily formed to and encasing a respective plurality of said links; and

means for securing one half of each segment transversely to the other respective half for gripping the respective plurality of links.

4,361,095

POWER SUPPLY FOR THE TRAVELING-FIELD WINDING OF A SYNCHRONOUS LINEAR MOTOR

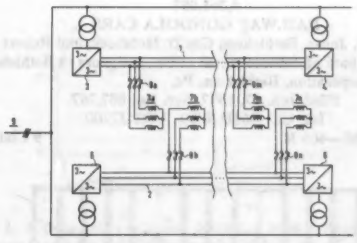
John-Philip Gibson, Fürth-Vach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 29, 1980, Ser. No. 173,685

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1979, 2932764

Int. Cl.³ H02P *7/46*

U.S. Cl. 104—292 **3 Claims**



1. An arrangement for supplying electrical power to a first linear motor stator of the type used to propel a track-bound vehicle, the first linear motor stator being disposed along a

track for producing a traveling-field which cooperates with an exciter disposed on the vehicle for propelling the vehicle along a first portion of the track, the first linear motor stator being connected by a first switching element to a first line conductor for receiving electrical current, characterized in that there are further provided

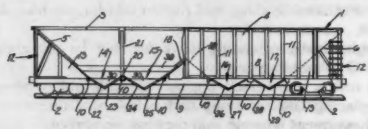
first and second supply means connected at respective ends of the first line conductor, each such supply means providing a portion of an electrical current flowing through the first linear motor stator when the first switching element is in a closed state.

4,361,096

RAILWAY HOPPER CAR DOOR SEAL

Stanley T. Funk, Cincinnati, Ohio, assignor to Ortner Freight Car Company, Milford, Ohio

Filed Oct. 6, 1978, Ser. No. 949,240
Int. Cl.³ B61D *7/04, 7/18, 7/22*
U.S. Cl. 105—248 **25 Claims**



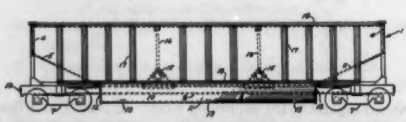
1. In a hopper car of the type having a plurality of chutes, each comprising substantially triangular hopper sheets and a cooperating pair of opposed hopper doors swingable between a closed position and a downwardly depending open position, each of said substantially triangular hopper sheets being mounted on said hopper car with its apex pointing downwardly and having a pair of converging lower edge portions each located adjacent one of said doors of said pair when said doors are in said closed position, said hopper doors having substantially planar inside surfaces extending between said hopper sheets, seal means to prevent seepage of a fine granular commodity between said hopper doors and the adjacent lower edge portions of said hopper sheets, said seal means comprising elongated strips of flexible resilient material mounted along the inside surface of each of said lower edge portions of said hopper sheets, each of said seal means having a free longitudinal edge portion extending below said lower edge portion of said hopper sheet to which it is attached by an amount sufficient to be bent inwardly by and to lie in substantial sealing engagement against said planar surface of the adjacent one of said hopper doors when said adjacent hopper door is in said closed position with the weight of said commodity bearing against said free longitudinal edge portion forcing it tightly against said hopper door planar surface when said hopper car is loaded to complete said sealing engagement.

4,361,097

RAILWAY GONDOLA CARS

Richard H. Jones, Bethlehem; Gus D. Holabeck, and Robert H. Dorian, both of Johnstown, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Jun. 17, 1977, Ser. No. 807,767
Int. Cl.³ B61D *3/00, 7/00, 17/00*
U.S. Cl. 105—406 R **9 Claims**



1. A railway car for carrying bulk materials having a pair of side walls and a pair of end walls supported by spaced trucks, the improvement comprising a floor structure having

(a) a center sill extending longitudinally over said trucks,

(b) a pair of concave floor panels between said trucks, each panel forming a longitudinal curvilinear trough having closed ends, the longitudinal axis of each of said troughs extending parallel to the longitudinal axis of said center sill.

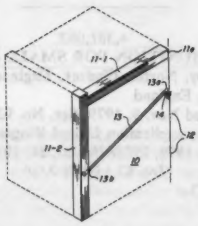
6. A floor for a railway car comprising a center sill and a pair of longitudinal curvilinear troughs having closed ends secured to opposite sides of said center sill with the longitudinal axes of said troughs extending parallel to the longitudinal axis of said center sill.

4,361,098

STRUCTURAL MEMBERS AND ASSEMBLAGES

Richard B. Rusch, 55 Flagg Rd., Southborough, Mass. 01772

Continuation of Ser. No. 645,428, Dec. 30, 1975, abandoned. This application Aug. 25, 1977, Ser. No. 827,592
Int. Cl.³ A47B *5/02*
U.S. Cl. 108—152 **12 Claims**



1. A structural assemblage comprising

a support structure including first and second structural members perpendicularly connected to a tubular member having an aperture therein facing a mounting surface;

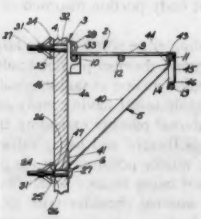
and means having oppositely directed ends for pivotally hooking said tubular member at said aperture by one of said ends, and the mounting surface by the other of said ends for supporting said first and second members in a position perpendicular to said mounting surface without requiring their attachment to said mounting surface.

4,361,099

SHELF APPARATUS

Elmer J. Kokenge, Cincinnati; C. William Carlson, Hamilton; F. A. Backscheider, Batavia, and William M. Campbell, Cincinnati, all of Ohio, assignors to Schulte Corporation, Cincinnati, Ohio

Filed Jun. 27, 1980, Ser. No. 163,650
Int. Cl.³ A47B *5/00*
U.S. Cl. 108—152 **10 Claims**



1. Shelf apparatus comprising:

a shelf defining a generally planar horizontal surface composed of a plurality of parallel spaced transversely extend-

ing rod members connected by longitudinally extending spaced front and rear support rods positioned adjacent the front and rear edges, respectively, of said shelf and including a lower support rod extending parallel to and vertically spaced beneath said front support rod;

a back clip anchor mounting said rear support rod to an adjacent vertically extending wall, said back clip comprising hanger means for supporting said rear support rod, locking means connected to said hanger means for preventing displacement of said rear support rod therefrom, and an expandable anchor for securing said hanger means to the wall; and

means for supporting the front edge of said shelf comprising a support brace including a rigid brace member terminating at its lower end in an angularly disposed tab for mounting to the wall such that the brace member extends upwardly and forwardly between the wall and the forward edge of the shelf, the upper end of said support brace terminating in clip means for lockingly engaging said front and lower support bars comprising a downwardly directed arcuate portion configured to slip over said front support bar and a web portion depending downwardly from said arcuate portion at an angle of about 45°–90° with respect to said brace member, said web member terminating in a rearwardly directed hook-like tab configured to abut the upper rear surface of said lower support bar, said brace being bendable downwardly along said arcuate portion to lock said front support bar within said arcuate portion when the mounting tab is in abutting engagement with the vertical wall surface.

4,361,100

PROCEDURE AND INSTALLATION FOR THE INCINERATING OF SLUDGE

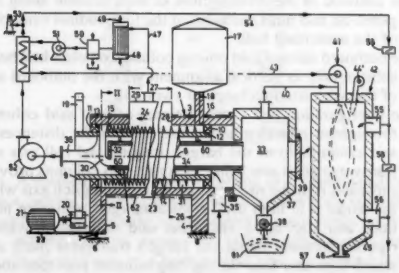
Klaus-Jürgen Hinger, Stuttgart, Fed. Rep. of Germany, assignor to Werner & Pfleiderer, Stuttgart, Fed. Rep. of Germany

Filed Apr. 16, 1981, Ser. No. 254,876

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1980, 3015290

Int. Cl.³ F23G *7/04*

U.S. Cl. 110—238 **15 Claims**



1. Method for the incinerating of sludge in which predried sludge is dried to residual moisture by the addition of heat in a first processing step and then is pyrolyzed, with the continued addition of heat and the exclusion of air, in a second processing step, and in which the pyrolysis gas obtained is used at least partially to generate the hot fumes required for heat input, characterized in that the predried sludge is carried co-currently with the hot fumes in the first processing step and that said sludge dried to residual moisture in the first step is then carried in the second processing step in countercurrent flow to said same fumes.

4,361,101

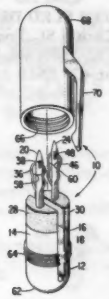
POCKET BUTTON ATTACHING DEVICE

Walter H. W. Marsh, Scotch Plains, N.J., and William Kahan, New York, N.Y., assignors to The Singer Company, Stamford, Conn.

Filed Jun. 22, 1981, Ser. No. 275,576

Int. Cl.³ D03B *3/14, 85/00*

U.S. Cl. 112—110 **11 Claims**



1. A button attaching device comprising a pair of needles for use in penetrating a layer of material and extending through the holes of a button to be attached to the material; a bifurcated member including a pair of substantially parallel arms each with one of the needles affixed in a free end portion to extend in the same general direction as the arm, and with a gap between the arm adjustable with side pressure on the arms to change the spacing between the needles; and a cover for the needles attachable to the bifurcated member.

11. A button attaching device comprising a pair of needles for use in penetrating a layer of material and extending through the holes of a button to be attached to the material; a pair of substantially parallel arms each with one of the needles affixed in a free end portion to extend in the same general direction as the arm; a hinge connection between the arms which normally maintains a defined gap between the arms but permits said gap to be varied with the application of side pressure to the arms, and the spacing between the needles to be altered accordingly; and a cover for the needles positionable over said arms.

4,361,102

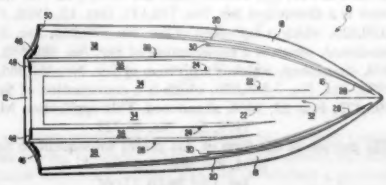
VEE TYPE PLANING HULL FOR POWER BOATS

Forrest L. Wood, Flippin; Dale H. Jensen, Everton; Kenneth P. Poley, Yellville; Charles C. Hoover, Bull Shoals, and Gary L. Wilson, Flippin, all of Ark., assignors to Wood Manufacturing Co., Inc., Flippin, Ark.

Filed Dec. 15, 1980, Ser. No. 216,758

Int. Cl.³ B63B *1/18*

U.S. Cl. 114—56 **5 Claims**



1. A deep vee entry hull having a central running surface extending fore and aft thereof flanked, in the after portion of the hull, by intermediate and outboard running surfaces; said intermediate running surfaces being planar and exhibiting, with said central running surface, a V configuration in cross section;

said outboard running surfaces being concave in cross section; the curvature of said concave outboard running surfaces, at a given fore and aft position, being constant up to and including an outer lip merging the same with the hull side-walls; and said outboard running surfaces terminating at the aft ends thereof in transverse wedge means.

4,361,103

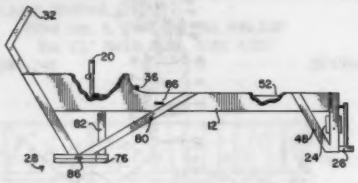
WATER SLED DEVICE

Bret G. Willat, 44999 Christy St., Fremont, Calif. 94538

Filed Dec. 12, 1980, Ser. No. 215,654

Int. Cl.³ B63B *1/28*

U.S. Cl. 114—246 **6 Claims**



1. A water sled device comprising:

an elongated base having a forward and a rearward end, and a pair of upwardly extending sidewalls;

downwardly extending bracket means attached proximate the rearward end of said base;

rudder means and elevator means pivotally supported by said bracket means;

a control bar having ends rotatably supported by said sidewalls;

a control stick pivotally attached to a mid-length portion of said control bar for longitudinal and lateral motion relative said base;

control cable means defining a closed loop connecting said control stick and said rudder, whereby lateral motion of said control stick controls the position of said rudder means; and

elevator actuator means including a first elevator actuator bar upwardly extending from said elevator means and a second elevator actuator bar coupled at one end to said first elevator actuator bar and coupled at its other end to said control means, whereby longitudinal motion of said control stick controls the position of said elevator means.

4,361,104

TWIN HULL SEMISUBMERSIBLE DERRICK BARGE

Samuel H. Lloyd, III, and Yoram Goren, both of Los Angeles, Calif., assignors to Santa Fe International Corporation, Orange, Calif.

Division of Ser. No. 22,506, Mar. 21, 1979, Pat. No. 4,273,067, which is a division of Ser. No. 732,117, Oct. 13, 1976, Pat. No. 4,150,635, which is a division of Ser. No. 650,953, Jan. 21, 1976, abandoned, which is a continuation of Ser. No. 486,588, Jul. 8, 1974, abandoned, which is a division of Ser. No. 161,865, Jul. 9, 1971, Pat. No. 3,835,800, which is a continuation of Ser. No. 705,175, Feb. 13, 1968, abandoned. This application May 14, 1979, Ser. No. 38,729

The portion of the term of this patent subsequent to Sep. 17, 1991, has been disclaimed.

Int. Cl.³ B63B *35/44*

U.S. Cl. 114—258 **19 Claims**

1. A column stabilized semisubmersible barge for marine construction, pipelaying and like other offshore operations, said barge being characterized by:

a pair of elongated hulls disposed in substantially parallel spaced side-by-side relation with each of said hulls spaced from and lying on an opposite side of the longitudinal centerline of said barge;

a working platform spaced above said hulls a predetermined height and normally lying in a generally horizontal plane;

means for supporting said platform in fixed spaced relation above said hulls including at least three pairs of upstanding columns connecting with each of said hulls and said platform; each of said columns having a substantially constant cross sectional area over the effective height of the column;

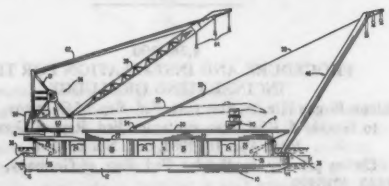
each of said hulls having, over substantially the entire length thereof, a substantially rectangular transverse cross section with its breadth greater than its height;

a plurality of longitudinally spaced structural means interconnecting and reinforcing the structural relationship of the hulls, platform and columns, with such structural means including substantially transversely extending members structurally interconnecting uppermost portions of the hulls;

said barge being generally rectangular in plan with the length of said barge along its longitudinal centerline and roll axis being substantially greater than the width of said barge along its transverse centerline and pitch axis;

at least three of said columns being located on each of said two hulls on opposite sides of the barge's roll axis with pairs of such columns being located near opposite ends of each of said hulls on opposite sides of the barge's pitch axis and another pair of said columns being located at an intermediate position of each of said hulls;

each of said columns having an oblong cross section with its dimension extending in the direction of the barge's longi-



tudinal axis being greater than the column's dimension extending transversely of the barge's longitudinal axis;

the centroid of the cross section of each column being disposed on said hulls outboard of the longitudinal centerline of the associated hull;

the outboard sides of said oblong columns on each hull being substantially in vertical alignment with the outboard side of the associated rectangular twin hull;

the configuration and cross-sectional area of said columns throughout effective height thereof and the distances of said columns from the barge's longitudinal roll axis and transverse pitch axis being such that said columns provide sufficient righting moments about roll and pitch axis when the barge is in high draft semisubmerged operating positions and also being such that said columns provide a righting moment about the barge's transverse pitch axis which is greater than the righting moment provided about the barge's longitudinal roll axis when the barge is in semisubmerged column stabilized operating positions;

said hulls having ballast compartments with each of said hulls including a plurality of separate ballast compartments spaced transversely within each hull and a plurality of separate ballast compartments spaced longitudinally within each hull;

means for ballasting said barge when required to alter its draft between a low draft hull-supported floating condition in which the hulls have freedboard with said transversely extending members which structurally interconnect uppermost portions of the hulls being disposed above the mean waterline and a high draft semisubmerged column stabilized floating and operating condition in which

the mean waterline is located along intermediate portions of said columns above said hulls and below the underside of said platform;

crane means located on said barge near one end thereof and mounted for rotation about a normally substantially vertical axis, said crane means being of sufficient size and capacity for various marine construction and other like offshore operations and having a boom of sufficient length to perform operations off at least one beam of the barge and off the end of the barge near which said crane means is located;

said means for ballasting including means for adjusting vessel angle of heel change caused during semisubmerged derrick barge operations to provide a reduction of the barge's angle of heel about its roll axis when required during semisubmerged column stabilized operations; and

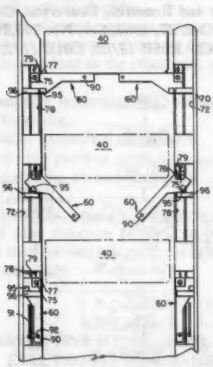
said means for ballasting including means for adjusting vessel angle of trim change caused during semisubmerged barge operations to provide a reduction of the vessel's angle of trim about its pitch axis when required during semisubmerged column stabilized operations.

4,361,105

BARGE-CARRYING VESSEL

William E. Kirby, Hong Kong, Hong Kong, and David J. Seymour, Daly City, Calif., assignors to Wharton Shipping Corporation, Edificio Vallarino, Panama, by said D. J. Seymour, a part interest

Filed Dec. 8, 1980, Ser. No. 214,412
Int. Cl.³ B63B *35/40*
U.S. Cl. 114—260 **28 Claims**



1. A load-supporting system for use in a sometimes flooded space defined by vertical walls and a bottom wall, comprising:

a plurality of parallel spaced-apart support arms, each having attachment means for pivotal attachment along a horizontal axis to a said vertical wall, and a load-support portion comprising a buoyancy tank, normally filled with air during storage and during upward swinging movement from a generally vertical storage position up to a generally horizontal load-supporting position,

first locking means for securing said arms in their storage position, from which they tend to swing up when released,

second locking means for securing said arms in their load-supporting position, from which they tend to swing down when released,

first lock release means for releasing said arms from said first locking means, and

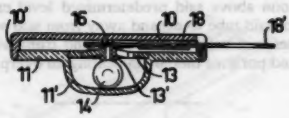
second lock release means for releasing said arms from said second locking means.

4,361,106

SHOCK INDICATING DEVICE

Krister Eklöf, Bastugatan 17, Stockholm, Sweden 117 25

Continuation of Ser. No. 92,939, Nov. 9, 1979, abandoned. This application Mar. 18, 1981, Ser. No. 245,185
Claims priority, application Sweden, Nov. 14, 1978, 7811767
Int. Cl.³ G01P *15/03*
U.S. Cl. 116—203 **7 Claims**



1. A device for providing a non-resettable, visual indication of a shock above a predetermined value sustained by an object carrying the device, comprising:

a housing means at least part of which is transparent including:

a dome-like portion having a central axis, a top portion, at least part of which is transparent, and a peripheral side wall portion;

a flange means extending radially outward from said side wall portion;

a plate-like biasing means fixedly secured to said housing and extending inwardly from said peripheral side wall portion and substantially perpendicular to said axis, said biasing means and the top portion of said dome-like portion spaced apart and defining a chamber; and

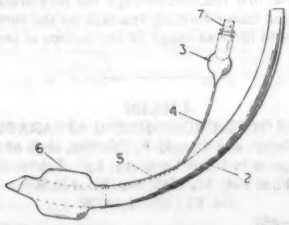
an indicating body within said chamber positioned between said biasing means and the top portion of said dome-like portion, said body being normally pressed by said biasing means in a first position in contact with the transparent part of said top portion with a force sufficient to maintain said body in said first position when subjected to a force below said predetermined value but said biasing means irreversibly releasing said body from said first position to a second position spaced therefrom upon being subjected to a shock exceeding said value.

4,361,107

OVERINFLATION INDICATOR FOR TRACHEAL TUBES

Gordon A. Gereg, 557-A Blue Church Rd., Coopersburg, Pa. 18036

Filed Nov. 20, 1980, Ser. No. 208,655
Int. Cl.³ G01P *3/00*; A61M *25/00*
U.S. Cl. 116—266 **5 Claims**



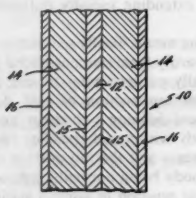
1. A pressure indicating device suitable for use with medical cannulas having inflatable sealing cuffs, said device including an inflation indicating balloon capable of holding a predetermined pressure and having a first port adapted to be fluidically connected to an inflatable cuff of a medical cannula and an opposite second port, an elongated tube of thin flexible material having one end secured to said balloon about said second port and an opposite end, said elongated tube having a first portion adjacent said first end and a second portion adjacent

said second end, said second portion being folded inside said first portion such that said one and opposite ends extend in the same direction, cylindrical valve means adapted to receive a conventional cuff inflating device, said valve means having a first end inserted into said second portion of said elongated tube and sealed to said second end thereof, said valve means having an opposite end extending from said first and second portions of said elongated tube, said first and second portions being snugly fit around said valve means wherein a pressure in said balloon above said predetermined level causes the first portion of said tube to expand away from said second portion and causes said valve means to extend from within said first and second portions thereby indicating an overpressure condition.

4,361,108
IMAGE-TRANSFERRING SHEET

Jean J. Robillard, 358 N. Pleasant St., Amherst, Mass. 01002, and John D. Angleman, 265 E. 66th, Apt. 15-D, New York, N.Y. 10021

Filed Feb. 13, 1981, Ser. No. 234,208
Int. Cl.³ B05C *11/00*; B41M *5/16*
U.S. Cl. 118—265 **7 Claims**



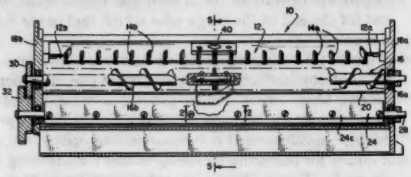
1. An image-forming and image-transferring sheet comprising a base layer having a first surface and a second surface, the base layer being impregnated with a first image-forming reactant, each of the surfaces having coated thereon a microporous membrane layer, the membrane comprising a cross-linked copolymer in which the degree of cross-linking varies from one surface of the membrane to the other, the copolymer comprising the polymerization product of monomers having one double bond with polyfunctional methacrylates obtained by esterifying methacrylic acid with polyhydroxylic alcohols, to form a gradient in elasticity across the thickness thereof so that the more elastic surface of the membrane is in contact with the base layer, the other surface of the membrane being coated with a second image-forming reactant, the membrane upon impact by an imaging instrument becoming extended to allow diffusion of the first reactant through the membrane to react with the second image-forming reactant on the surface of an adjacent sheet to form an image on the surface of the adjacent sheet.

4,361,109
DEVELOPER CROSSMIXING APPARATUS

Edward F. Mayer, and Donald F. Pfeuffer, both of San Jose, Calif., assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 12, 1980, Ser. No. 120,907
Int. Cl.³ G03G *15/09*
U.S. Cl. 118—655 **8 Claims**

1. A crossmixing device for ensuring adequate mixing of developer in an electrostatic printing machine that includes a sump for holding said developer comprising developer moving means external to said sump for removing developer from said sump and shifting it in opposite directions above two adjacent portions of said sump in a direction transverse to the path at which the developer is removed from the sump and returning developer to said sump, said moving means comprising a screw conveyor external to said two sump portions for moving said developer, said screw conveyor having a left-hand thread on one portion thereof adjacent to one of said sump portions and a right-hand thread on another portion thereof adjacent to the other of said sump portions so that said developer moves in opposite directions along said screw conveyor, the movement of developer in each screw conveyor portion being opposite to said shifting movement of developer above the adjacent sump portion, said screw conveyor including an inlet to and an outlet

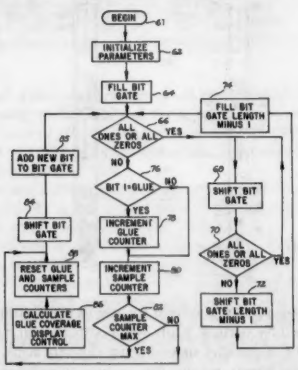


from each portion thereof, the inlet and outlet of each screw conveyor portion being spaced from each other in a lengthwise direction along said conveyor, each inlet receiving developer material at the terminus of said shifting movement above an individual one of said sump portions, the outlet from each screw conveyor portion directing developer into a region of said sump adjacent the beginning of said shifting movement along the other one of said sump portions.

4,361,110
APPARATUS FOR MONITORING AND CONTROLLING THE DISTRIBUTION OF DROPLETS ON A SURFACE

James F. Holmes, Portland, Oreg., assignor to Oregon Graduate Center for Study and Research, Beaverton, Oreg.

Filed Oct. 27, 1980, Ser. No. 200,891
Int. Cl.³ B05B *12/08*; C01B *11/28*
U.S. Cl. 118—665 **10 Claims**



1. Apparatus for monitoring in a defined viewing zone certain area distribution characteristics of discrete droplets distributed as islands over a surface in a workpiece moving relative to the zone, where the light reflectance of the droplets differs in a known way from that of the surface, said apparatus in operative condition comprising

a light source for directing a beam of light into said zone,

a photodetector mounted adjacent said source for detecting the level of light reflected from said zone, and for producing a signal which varies according to the instantaneously detected reflected light levels,

means connected to said photodetector to transform said signal to a related binary data stream composed of one and other data states representing reflected light levels from

covered and uncovered regions, respectively, of the surface, and

means connected to said transforming means to compute such characteristics from the data stream.

4,361,111

GOLF BALL DRY RACK

Henry J. Groen, 899 Ashburn St., Herndon, Va. 22070

Filed Dec. 23, 1981, Ser. No. 334,019

Int. Cl.³ B05C *13/02*

U.S. Cl. 118—503 **8 Claims**

1. A disassemblable rack for supporting a spherical object comprising:

A. a base member having at least three series of radially oriented perforations therein;

B. at least three elongate prongs adapted to circumferentially engage a spherical object at one end, while being supported in said base at the other end, each prong further including;

(i) a substantially horizontal leg, extending through said base perforations;

(ii) a vertically extending shank; and

(iii) a curvate top portion, extensible radially inwardly, so as to engage the circumference of a spherical object; and

C. a clasping means, engaging the exterior of said shank portions of said elongate prongs, so as to support said shanks and said curvate top portions in vertical array with respect to said base.

4,361,112

APPARATUS FOR DEVELOPING LATENT ELECTROSTATIC IMAGES

Samuel R. DiNallo, Sr., Framingham, and Leon K. Najarian, Milford, both of Mass., assignors to Coulter Systems Corporation, Bedford, Mass.

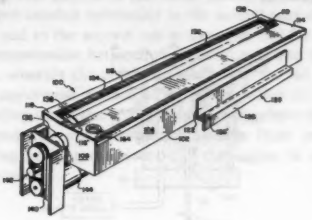
Continuation of Ser. No. 134,519, Mar. 27, 1980, Pat. No. 4,271,785. This application Jan. 26, 1981, Ser. No. 228,251

The portion of the term of this patent subsequent to Jun. 9, 1998, has been disclaimed.

Int. Cl.³ G03G *15/10*

U.S. Cl. 118—661 **4 Claims**

1. A toning device for disposition at the toning station of an electrophotographic imaging apparatus wherein an electrophotographic member having a photoconductive coating portion on one surface thereof which carries a latent electrostatic image is translated therepast for development of said image, said toning device comprising a container of generally rectangular box-like configuration adapted to contain a liquid toner suspension therein, said container having opposite side walls, opposite end walls and a bottom wall, liquid toner feed roller means within said container lengthwise thereof and extending partially outward thereof, said liquid toner feed roller means being journalled for rotation at the opposite end walls for rotating said liquid toner feed roller means in contact with the toner suspension, collar means coaxially coupled to said feed roller means interior of said container and adjacent the end walls of said container at opposite ends of said liquid toner feed roller means for free rotation independent of said liquid toner feed roller means, said collar means having an outer diameter slightly greater than the diameter of said liquid toner feed



roller means and means for seating said container within said electrophotographic imaging apparatus at the toning station thereof with said liquid toner feed roller means closely proximate said photoconductive surface of the electrophotographic member parallel thereto and said collar means engaged therewith along the edges thereof whereby to define a toning gap therewith for receiving toner suspension from said liquid toner feed roller means.

4,361,113

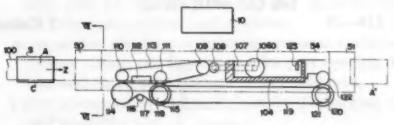
APPARATUS FOR PAINTING THE INNER SURFACE OF THE SIDE SEAM OF A CAN BODY

Wakamatsu Atsuyuki, Shimizu, Japan, assignor to Daiwa Can Company, Limited, Tokyo, Japan

Filed Aug. 24, 1981, Ser. No. 295,315

Int. Cl.³ B05C *1/02, 7/08*

U.S. Cl. 118—694 **2 Claims**



1. An apparatus for painting the inner surface of the side seam of a can body with both ends open, said side seam being formed by resistance seam welding and then painted as the can body is advanced in a horizontal direction with the side seam being at the top, said apparatus including a can body advancing device; a supporting member having side seam painting means composed of a paint vessel and an applicator roll and which guides the advancing can body while keeping it horizontal; an applicator roll drive device; a roller that is positioned under the foremost end of the supporting member and which supports said member horizontally; and means to detect the level of the paint in the paint vessel, said apparatus being characterized by having an annular projection with an acute vertical angle formed in the middle and both edges of the outer periphery of the applicator roll.

4,361,114

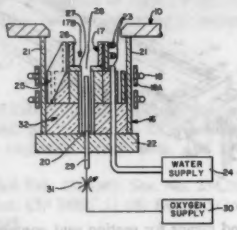
METHOD AND APPARATUS FOR FORMING THIN FILM OXIDE LAYERS USING REACTIVE EVAPORATION TECHNIQUES

Harold Gurev, San Rafael, Calif., assignor to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Continuation-in-part of Ser. No. 194,689, Oct. 6, 1980, abandoned. This application May 4, 1981, Ser. No. 260,047

Int. Cl.³ C23C *13/08*; B05D *3/06*

U.S. Cl. 118—723 **10 Claims**



6. In apparatus for reactively depositing an oxide coating on a substrate, in combination:

a vacuum chamber; means for evacuating said chamber; means for positioning a substrate of selected material in said chamber; an evaporation source disposed in said chamber for depositing a preselected material onto said substrate; a plasma activation source mounted to said chamber and comprising a boule of preselected insulating material defining a substantially closed cavity communicating with the interior of said vacuum chamber, a conductive coil arrangement disposed generally around said boule, and piping means for communicating a supply of oxygen to said cavity; and means for supplying a radio frequency signal to said coil means to produce a radio frequency electromagnetic field within said cavity having a preselected magnitude of energy sufficient to create a self-igniting oxygen plasma within said cavity but insufficient to evaporate material from the walls of said boule.

4,361,115

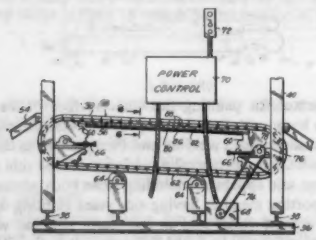
HORSE EXERCISER

Wendell A. Pike, Birch Ave., Norway, Me. 04268

Filed Nov. 17, 1980, Ser. No. 207,355

Int. Cl.³ A01K *15/02*

U.S. Cl. 119—29 **7 Claims**



1. A horse exerciser comprising:

a conveyor belt having an upper run and a lower run;

means for driving said conveyor belt;

said conveyor belt being formed of transverse substantially rigid slats linked together;

each of said slats being a U-shaped steel channel extending substantially the entire transverse dimension of said slats with the opening of the U facing upward in the upper run;

a rubber material molded to fill said opening in said U-shaped steel channel and to project a substantial distance thereabove thereby to provide a resilient outer surface on said slat whereby said slats provide stable footing for said horse and provide resistance to damage from hooves of said horse; and

means for stably supporting said slats in a substantial portion of said upper run.

4,361,116

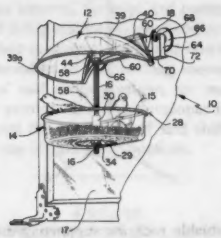
WINDOW BIRD FEEDER

Peter Kilham, Box 98, Mill Rd., Foster, R.I. 02825

Filed Feb. 2, 1980, Ser. No. 231,581

Int. Cl.³ A01K *39/00*

U.S. Cl. 119—51 R **15 Claims**



1. A feeder for birds and the like comprising:

(a) an elongated rod of noncircular cross-section;

(b) a substantially horizontally disposed dish member for receiving and containing feed material and the like, said dish member having a bottom wall with side walls upstanding therefrom, one of said side walls being substantially flat and substantially vertical, said dish member having a first aperture of substantially the same cross-sectional configuration as said rod extending substantially vertically therethrough, said rod being slidingly received in said first aperture in a nonrotatable manner;

(c) a generally dome shaped hood member disposed generally horizontally in spaced relation above said dish member, said hood member having a substantially flat vertical side wall which is generally coplanar with said dish member vertical side wall, said dome member having a second aperture of substantially the same cross-sectional configuration as said rod extending substantially vertically therethrough, said rod also being slidingly received in said second aperture in a nonrotatable manner;

(d) means longitudinally fixing the positions of said dish and hood members on said rod; and

(e) means for supporting said feeder closely adjacent to a substantially vertical supporting surface with said vertical side walls in substantially parallel, spaced relation thereto.

4,361,117

POULTRY FEEDER WITH AUTOMATIC CUTOFF

Ricardo J. Tohme, 1105 Regency Rd., NW., Atlanta, Ga. 30327

Filed Jul. 20, 1981, Ser. No. 285,309

Int. Cl.³ A01K *5/02*

U.S. Cl. 119—52 B **5 Claims**

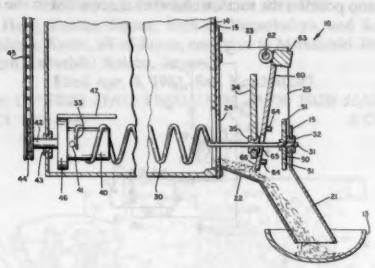
1. In an animal feed hopper for moving along and dispensing animal feed into an elongate feeding trough comprising a bulk feed container for holding a quantity of feed, said container having a downwardly directed discharge spout for delivering the feed from said container into the trough, agitator means for urging the feed laterally from said container into said discharge spout and thence into the trough as said hopper travels along

the length of the trough, and agitator drive means for imparting motion to said agitator means,

the improvement comprising:

said agitator means and said agitator drive means including agitator drive disconnect means releasably connecting said agitator drive means to said agitator means,

a paddle member suspended in the path of the feed as the feed moves laterally from the bulk container through said



discharge spout, said paddle member being constructed and arranged to move into mechanical locking engagement with said agitator means in response to the accumulation of feed in said discharge spout and to the continued movement of the feed by said agitator means laterally into said discharge spout for holding the agitator means against motion until the accumulation of feed in the spout has been depleted.

4,361,118

COOLING APPARATUS OF COMBUSTION CHAMBERS FOR WATER-COOLED ENGINES

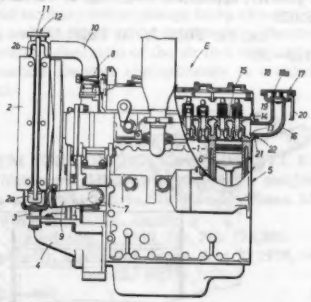
Yoshihiro Tokita, Sakaishi, Japan, assignor to Kubota, Ltd., Japan

Filed Dec. 1, 1980, Ser. No. 211,675

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1980, 55-24455[U]; Japan, Feb. 26, 1980, 55-24456[U]

Int. Cl.³ F01P *11/02*

U.S. Cl. 123—41.15 **6 Claims**



1. A cooling system for combustion chambers of a water-cooled engine having a radiator on the front of the engine and a water jacket around the combustion chambers, which cooling system comprises:

(a) an upper tank and a lower tank carried by the radiator;

(b) means providing communication between the lower tank and the water jacket for conducting cooling water into the water jacket from the radiator;

(c) means providing communication between the upper tank and the water jacket for conducting cooling water into the radiator from the water jacket;

(d) a first port at the upper tank for introducing cooling water therein;

(e) a first cap for regulating pressure developed in the upper tank;

(f) a second port at the water jacket at the rear of the engine for releasing steam developed in the upper rear portion of the water jacket;

(g) a second cap for regulating pressure developed at the upper rear portion of the water jacket; and

(h) a first conduit connected to the second port at its lower end and to the second cap at its upper end for providing communication between the second port and the second cap, wherein the conduit disposes the second cap about the uppermost portion of the water jacket to permit exhausting steam therefrom into the atmosphere through the second cap and preventing damage from overheating during prolonged operation of the engine in an inclined disposition.

4,361,119

SUCTION SYSTEM IN AN ENGINE

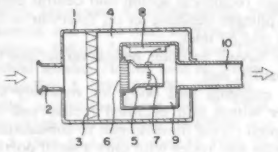
Norio Endo, Kameoka; Yoshiaki Asayama, and Masami Kabuto, both of Himeji, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Mitsubishi Jidosha Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Feb. 28, 1980, Ser. No. 125,745

Claims priority, application Japan, Mar. 1, 1979, 54-25951

Int. Cl.³ F02B *75/18;* **F02M** *51/00*

U.S. Cl. 123—52 M **6 Claims**



1. An air intake assembly for use with an internal combustion engine, which comprises:

air inlet means comprising an air cleaner casing having an inlet port for receiving air into said assembly from the ambient space around said assembly;

an expansion chamber completely enclosed within said air cleaner casing and having an inlet port opening directly into said air cleaner casing and an outlet port;

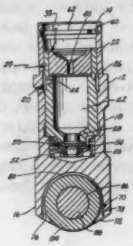
a duct connected to said outlet port for discharging air from said assembly; and

flow detector means disposed completely within said expansion chamber and having means for detecting the flow rate of air flowing through said expansion chamber inlet port and means connected to said detecting means for producing an electrical signal corresponding to said flow rate; said expansion chamber having therein a hollow circumferentially closed elongated segment having one end fitted around said inlet port of said expansion chamber said segment extending from said inlet port of said expansion chamber into the interior of the expansion chamber, whereby the air introduced from said inlet means is directed through said segment into said expansion chamber; and said flow rate detector means being an element disposed within said segment and said signal producing means being an electrical circuit means disposed within said expansion chamber for forming said electrical signal.

4,361,120
ROLLER TAPPET AND METHOD OF MAKING SAME

Kenneth E. Kueny, North Muskegon, Mich., assignor to Sealed Power Corporation, Muskegon, Mich.

Filed May 2, 1980, Ser. No. 146,137
Int. Cl.³ F01L 1/14
U.S. Cl. 123—90.55 2 Claims



1. A roller tappet adapted to be reciprocated by a cam in an internal combustion engine, said roller tappet comprising:

a cast, integral body formed from a castable, metal material having a strength less than SAE 1144 steel and which is compatible with an engine block, said body having an upper end and a lower end facing the cam, said body defining an oil inlet, a central bore opening through said upper end, and an enclosed recess opening through the lower end, said enclosed recess including spaced, generally parallel sidewalls, spaced, generally parallel end walls joined to said sidewalls and a generally semi-circular top wall joined to said sidewalls and said end walls, said sidewalls and end walls defining a curved outer surface at said lower end through which said enclosed recess opens;

a plunger reciprocal within said central bore of said body, said plunger defining an oil reservoir in communication with said oil inlet;

a roller having an outer peripheral surface and a radius of curvature; and

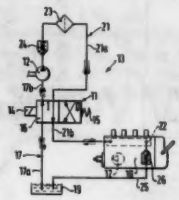
means engaging said body for rotatably supporting said roller within said enclosed recess, said roller and said enclosed recess dimensioned to substantially enclose and encircle said roller with only a small portion of the outer peripheral surface of said roller extending from said enclosed recess, said outer surface of said lower end having a radius of curvature greater than and closely following that of the radius of curvature of said roller to define a clearance recess which insures clearance between the body and the cam which engages the outer peripheral surface of said roller, said means for rotatably supporting said roller comprising a pin extending through said roller and into said sidewalls of said recess.

4,361,121
CONTROL DEVICE FOR SHUTTING OFF A DIESEL ENGINE

Alexander Clemens, Stuttgart; Peter Schueler, Leonberg; Karl Reiff, Plochingen, and Johann Warga, Möglingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 15, 1981, Ser. No. 254,557
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1980, 3014712
Int. Cl.³ F02B 77/08; F02D 1/00
U.S. Cl. 123—198 DB 4 Claims

1. A control device for shutting off a Diesel engine, including a fuel tank, an intake line having first and second inlet sections, each of said inlet sections having end portions, a reversal valve, said first inlet section being connected between the fuel tank and the reversal valve, a supply pump having an intake side and an exhaust side connecting one end of said second inlet section to said reversal valve, a supply line having first and second supply sections, a fuel filter provided in the first supply section, each of said supply sections having end portions, one end portion of said first supply section connecting said supply pump to said reversal valve, an injection pump having a suction chamber associated with said engine, one end portion of said second supply section connecting said reversal valve to said suction chamber, an overflow line connecting said suction chamber to said fuel tank, said reversal valve having a stop position and an operational position, whereby in said stop position the suction chamber is conected to the intake

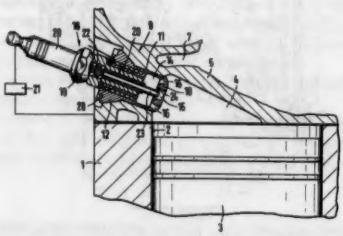


side of said supply pump and the exhaust side of the supply pump is connected to said fuel tank, the improvement comprising first check valve means provided in said first supply section between the exhaust side of said supply pump and said fuel filter, said first check valve means having spring means to seal against vacuum, when fuel ceases to flow, and second check valve means provided in said overflow line between said suction chamber and said fuel tank, said second check valve means is arranged to seal against vacuum when closed, and further wherein said second check valve means is arranged to determine pressure in said suction chamber.

4,361,122
INTERNAL COMBUSTION ENGINE WITH EXTERNALLY-SUPPLIED IGNITION, HAVING ONE MAIN COMBUSTION CHAMBER PER CYLINDER AND ONE IGNITION CHAMBER

Reinhard Latsch, Vaihingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 14, 1980, Ser. No. 207,050
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951029
Int. Cl.³ F02B 23/00; F02P 1/00
U.S. Cl. 123—266 11 Claims



1. An ignition chamber insert, comprising an elongated interiorly and exteriorly threaded body portion, said exteriorly threaded portion arranged to merge with a smooth surface portion capable of being received in sealing relation with means defining an aperture in an engine block, an electrode, an insulating body surrounding a portion of said electrode, said insert further including at least at one end, a centrally disposed aperture in said at least one end which receives said electrode of an ignition device in spaced relation therewith, another open

end in said insert to receive said ignition device and a heating element in a chamber in said insert, said electrode is embodied as a slender heat pipe which extends from said insulating body into said aperture and said electrode is operated at a temperature below a glow ignition temperature and said heating element is disposed about said insulating body.

4,361,123

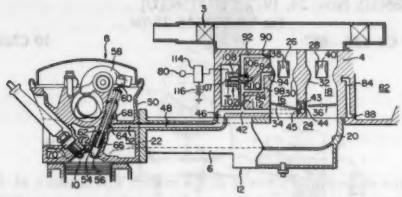
INTERNAL COMBUSTION ENGINE

Kenji Hori; Yuhiko Kiyota, both of Nagaokakyo, and Katsuo Akishino, Kyoto, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Apr. 3, 1981, Ser. No. 250,547

Int. Cl.³ F02B *75/02;* **F02M** *23/04, 25/06;* **F02B** *33/00*

U.S. Cl. 123—308 **6 Claims**



1. An internal combustion engine comprising a combustion chamber having an intake port and an exhaust port, a main intake passage supplying an air-fuel mixture produced by a carburetor to said intake port, an injection port opening to said combustion chamber, an auxiliary intake passage connected to said injection port and supplying air or an air-fuel mixture thereto, a fuel supplement passage for supplementally supplying fuel to said auxiliary intake passage, a solenoid valve for opening and closing at least one of said auxiliary intake passage and fuel supplement passage, an exhaust passage connected to said port, a catalytic converter disposed in said exhaust passage, an oxygen sensor disposed in said exhaust passage either upstream or downstream of said catalytic converter, and a control device responsive to a signal from said oxygen sensor to control opening and closing of said solenoid valve, an amount of air or fuel supplied to said combustion chamber through said auxiliary intake passage being changed by control of opening and closing of said solenoid valve, thereby regulating an overall air-fuel ratio of the air-fuel mixture supplied to said combustion chamber approximately to a stoichiometric air-fuel ratio.

4,361,124

SYSTEM FOR CONTROLLING AIR-FUEL RATIO

Hiroyuki Nakamura, Higashiyamato, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo and Nissan Motor Co., Ltd., Yokohama, both of, Japan

Filed Aug. 1, 1980, Ser. No. 174,380

Claims priority, application Japan, Aug. 2, 1979, 54-98921

Int. Cl.³ F02M *7/00*

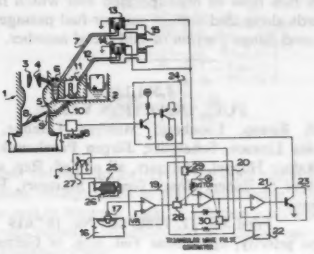
U.S. Cl. 123—440 **14 Claims**

1. In a system for controlling the air-fuel ratio for an internal combustion engine having an induction passage, air-fuel mixture supply means, a throttle valve in the induction passage, an exhaust passage communicating with the engine, detecting means for detecting the concentration of a constituent of exhaust gases passing through said exhaust passage, an electronic control circuit operatively connected to an output of said detecting means and electromagnetic valve means actuated by an output signal from said electronic control circuit for correcting the air-fuel ratio of the air-fuel mixture supplied by said air-fuel mixture supply means dependent on said detecting means, the improvement comprising

first converting means for converting the a condition in the induction passage to an electric quantity first output signal,

second converting means for converting a presently existing ambient atmospheric pressure at an altitude of the engine to a corresponding electric quantity second output signal,

first means dependent on the first output signal of said first converting means for rendering said electronic control



circuit non-responsive to an output from said detecting means,

second means dependent on the first output signal of said first converting means for feeding said second output signal of said second converting means to said electronic control circuit for controlling the air-fuel ratio to a proper value in dependency on the altitude of the engine.

4,361,125

FUEL EVAPORATOR FOR INTERNAL COMBUSTION ENGINE

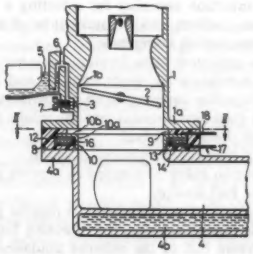
Toshihiko Igashira, Toyokawa; Yasuhiko Ishida, Mishima; Ken Nomura, Okazaki, and Seiko Abe, Kariya, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Feb. 3, 1981, Ser. No. 231,116

Claims priority, application Japan, Feb. 6, 1980, 55-13325; Feb. 6, 1980, 55-13326; May 17, 1980, 55-65804; Aug. 13, 1980, 55-111409; Sep. 3, 1980, 55-122753; Aug. 13, 1980, 55-114607[U]

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—549 **11 Claims**



1. A fuel evaporator attached between an air-fuel passage and an intake manifold, said air-fuel passage being provided with a throttle valve for adjusting the flow of the air-fuel mixture which is supplied to an engine passing through an air-fuel passage and fuel supply means for supplying fuel into said air-fuel passage, comprising:

a heat insulating member which is disposed between said air-fuel passage and said intake manifold;

a metal member including:

a pipe portion having an inner bore and

a flange portion which is integrally formed with said pipe

portion so as to project outwards from the upper end of said pipe portion;

a heating element made of ceramic body having positive temperature coefficient of resistivity, which is closely adhered in the outer surface of said metal member;

said metal member being diaposed so that said pipe portion thereof extends along the wall of said intake manifold; and

the outer peripheral portion of said flange portion thereof being supported by said heat insulating member so that fuel film flow of unevaporated fuel which flows downwards along said wall of said air-fuel passage is received by said flange portion of said metal member.

4,361,126
FUEL INJECTION VALVE

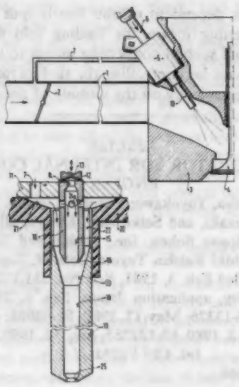
Heinrich Knapp, Leonberg; Manfred Lembke, Gerlingen; Mathias Linssen, Schesslitz; Jürgen Peczkowski, Bamberg, and Rainer Höppel, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 11, 1980, Ser. No. 167,619

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1979, 2936426

Int. Cl.³ F02B *23/00*

U.S. Cl. 123—585 **3 Claims**



1. A fuel injection assembly for injecting a mixture of fuel and a gaseous medium into an intake tube of an internal combustion engine, which comprises:

a mixture guidance tube having an inner surface which defines a mixture guidance channel and a centrally disposed injection opening from a downstream end of the mixture guidance channel into the intake tube;

a source of pressurized fuel;

a source of pressurized gaseous medium;

a fuel injection valve connected to receive pressurized fuel from the fuel source;

first directing means, connected to receive pressurized fuel from the injection valve, for directing fuel centrally into an upstream end of the mixture guidance channel when the injection valve is open; and

second directing means, connected to receive pressurized gaseous medium from the gaseous medium source, for directing gaseous medium peripherally into the upstream end of the mixture guidance channel so that the fuel entering the mixture guidance channel is surrounded by the gaseous medium entering the mixture guidance channel;

the injection opening and the mixture guidance channel being embodied so as to attain sufficiently high flow velocities of the fuel and gaseous medium therethrough so that no fuel is mixed with an outermost portion of the gaseous medium flowing over the inner surface of the mixture guidance tube during passage of the mixture through the mixture guidance channel and the injection opening into the intake tube, to thus avoid wetting of the mixture guidance tube inner surface, wherein the maximum cross section of the mixture guidance channel does not exceed three times the cross section of the injection opening.

4,361,127
INTAKE VACUUM CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE

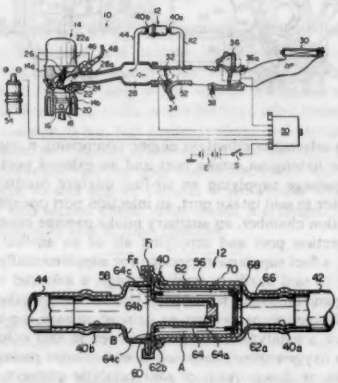
Takao Fukuhara, Yamato, and Yoshio Iwasa, Nagareyama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Division of Ser. No. 948,560, Oct. 4, 1978, Pat. No. 4,237,842. This application Aug. 26, 1980, Ser. No. 181,647

Claims priority, application Japan, Oct. 7, 1977, 52-135555[U]; Nov. 24, 1977, 52-157560[U]

Int. Cl.³ F02M *23/04*

U.S. Cl. 123—587 **10 Claims**



1. In an internal combustion engine having a combustion chamber, means defining an intake passageway providing communication between the combustion chamber and ambient air, and a throttle valve rotatably disposed in the intake passageway,

an intake vacuum control device comprising:

an outer cylindrical member formed at its first end with an air inlet opening through which the inside of said outer cylindrical member is communicable with the intake passageway upstream of the throttle valve;

a valve seat secured to the inner surface of the first end of said outer cylindrical member and adjacent the air inlet opening, said valve seat being made of an elastomeric material;

a movable valve member seatable on said valve seat;

a coil spring disposed in said outer cylindrical member to bias said valve member to be seated on said valve seat; a cylindrical spring guide member disposed inside the coils of said coil spring, defining a chamber between it and said outer cylindrical member, said chamber being communicated with the intake passageway downstream of the throttle valve and communicable through the air inlet opening with the intake passageway upstream of the throttle valve, said spring guide member having a first end which faces to and is spaced from said valve member to restrict the movement of said valve member; and a valve stopper made of an elastomeric material and secured at the first end of said spring guide member so that said valve

member is movable between said valve seat and said valve stopper.

4,361,128

CARBURETOR INSERT APPARATUS

Harold Goldman, deceased, late of Riverdale, N.Y., and by Harriet Goldman, administrator, 3725 Blackstone Ave., Apt. 7-F, Riverdale, N.Y. 10463

Filed Mar. 9, 1981, Ser. No. 241,839

Int. Cl.³ F02M *29/02*

U.S. Cl. 123—592 **8 Claims**

1. In a carburetor system for an internal combustion engine, which engine includes a carburetor for supplying a mixture of fuel and air to said engine, the combination therewith of an insert situated after said carburetor and positioned between the carburetor and the engine, said insert comprising a cup-like cylindrical member having an open top surrounded by a peripheral flange, a major sidewall surface having located thereon regularly spaced rectangular apertures, with said apertures occupying a substantial portion of the total area of said surface, a bottom surface having a plurality of circular apertures each of a relatively small diameter and arranged in concentric circles about a central aperture with said circular apertures located about said central aperture in at least four concentric circular patterns with the apertures in the third circular pattern located between the apertures in the second and fourth pattern, first and second circular screen members inserted within the hollows of said insert and overlying said bottom surface with said screen members being moveable with respect to one another and with respect to said bottom surface and a cylindrical screen member having an opened top and an opened bottom inserted within the hollow of said insert and overlying said rectangular apertures.

4,361,129

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Osamu Sugie, Handa; Takasi Hachiga, Kariya, and Michio Iyoda, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 31, 1980, Ser. No. 203,222

Claims priority, application Japan, Nov. 6, 1979, 54-154474[U]

Int. Cl.³ F02P *3/04*

U.S. Cl. 123—622 **6 Claims**

1. An ignition system for internal combustion engines comprising:

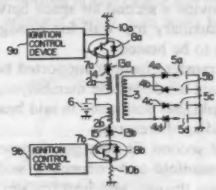
an ignition coil having two primary windings whose one ends are connected to each other and a secondary winding;

a DC power supply having two terminals, one of said terminals being connected to a junction point of said primary windings;

two power transistors each thereof having a collector-emitter path connected between the other terminal of said DC power supply and the other end of associated one of said primary windings;

two diodes each thereof being connected in inverse parallel with the collector-emitter path of associated one of said power transistors;

two ignition control devices each thereof being connected to a base of associated one of said power transistors such that said power transistors are alternately turned on and off;



two constant voltage diodes having the same predetermined breakdown voltage, each of said diodes being connected in series and in forward polarity relation with associated one of said primary windings and associated one of said power transistors; and

a high voltage circuit including a plurality of spark plugs connected to said secondary winding.

4,361,130

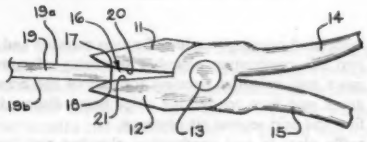
GLASS SHEET SHAPING AND TRIMMING (GROZING) TOOL AND METHOD OF USE

Andrew R. Maglia, deceased, late of Detroit, Mich. by Concetta D. Maglia, executrix, assignor to Mark Talaba, Birmingham and Angela S. Maglia, Royal Oak, both of, Mich.

Filed Oct. 28, 1980, Ser. No. 201,424

Int. Cl.³ B28D *5/04*

U.S. Cl. 125—36 **9 Claims**



1. A tool for nibbling at an edge of a glass sheet to rapidly shape or trim the sheet without cracking the sheet which comprises:

(a) a pair of hinged jaws each having opposed flat first jaw surfaces extending from the hinge which move into contact with each other adjacent the hinge when the jaws are closed and remote from the hinge having second opposed jaw surfaces as extensions of the first jaw surfaces separated from each other to form an open V when the jaws are closed, wherein the jaw surfaces are movable at the hinge so that the second jaw surfaces are provided into contact with opposite corners at an edge of the sheet of glass to produce a scraping action at the corners to thus fracture small flakes of glass from and form the edge; and

(b) means for moving the jaws about said hinge.

4,361,131

CIRCULATING-AIR HEATING STOVE WITH EXIT AIR HEAT EXTRACTOR

Matthew W. Homolik, 2930 Ransell Rd., Merrifield, Va. 22116

Filed Aug. 26, 1980, Ser. No. 181,477

Int. Cl.³ F24B *7/00*

U.S. Cl. 126—123 **11 Claims**

1. A wood stove including in combination:

a combustion chamber having front, back, top, bottom and side walls, and an air deflection member supported to said back and top walls;

an outer shell enclosing said combustion chamber including

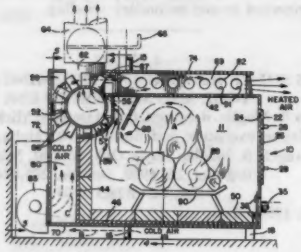
an auxiliary back wall spaced from said back wall to provide a first rearward airspace between said back wall and said auxiliary back wall for passage of air to be heated, a back air inlet in said auxiliary back wall adjacent the bottom of said airspace for the entry of air into said airspace, and an auxiliary top wall spaced from said top wall to provide a second air space between said top wall and said auxiliary top wall for passage of heated air into a room to be heated;

a heat transfer chamber supported between said outer shell and said air deflection member;

a manifold (52) positioned in said heat transfer chamber and extending thereacross;

first and second air passages disposed on opposite sides of said manifold and connecting said first and said second airspace through said heat transfer chamber to establish a continuous passage for air from said inlet into the room to be heated;

a plurality of spaced heat conductive strips extending radially outward from the surface of said manifold, said manifold having at least one air inlet communicating with an



associated opening in said deflection member and leading into the combustion chamber for entry of combustion gases and an outlet opening for exit of the combustion gases, said heat conductive strips being disposed in said first and said second air passages;

a baffle plate in said combustion chamber and depending from said top wall and positioned so as to increase the turbulence of combustion products and direct the exit of said products from the combustion chamber around the baffle plate as these products rise therefrom, said baffle plate extending across the combustion chamber and spaced forward of said manifold and deflection member;

a flue opening located in said auxiliary top wall substantialy centered above the exit opening of the manifold for forming an outlet for the products of combustion;

said front wall having a rectangular opening for permitting access to the combustion chamber; and

a door pivotally attached to one side of the rectangular opening in said front wall and adapted to be pivoted between a closed and an open position for controlling access to the combustion chamber.

4,361,132

STOVE BURNER APPARATUS

Arlene F. Adkins, 3027 N. Alta Vista Dr., Flagstaff, Ariz. 86001

Filed Jul. 6, 1981, Ser. No. 280,944

Int. Cl.³ F24C *15/10*; B65D *43/18*

U.S. Cl. 126—221 **7 Claims**

1. Stove cover apparatus for covering burners on a stove top having a plurality of burners, comprising, in combination:

plate means, comprising a plurality of plates of substantially the same size for covering the plurality of burners; and

fastening means for securing the plurality of plates of the plate means together at a common location whereby each plate of the plate means pivots independently of any other

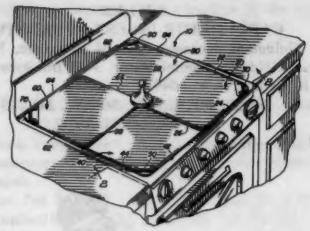


plate for selectively covering and uncovering any one or more of the plurality of burners on the stove top.

4,361,133

CATALYTIC SUPPORT FOR A CURLING DEVICE

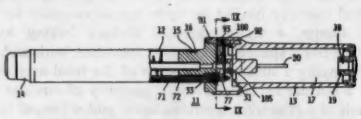
James V. Bonnema, Peabody, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Jul. 22, 1980, Ser. No. 167,633

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1979, 2948857; Dec. 25, 1979, 7934175[U]

Int. Cl.³ A25D *1/04*; F23D *3/40*

U.S. Cl. 126—408 **4 Claims**



1. In a hand-held curling device having a tubular body defining a heating chamber therein and having first and second ends and a hair winding portion disposed between the first and second ends and surrounding the heating chamber, an ignition means disposed in the tubular body proximate the second end, a housing mounted proximate the tubular body including a fuel supply means for storing a fuel in a liquid state, and aspirating means coupled between the fuel supply means and the heating chamber for vaporizing the fuel and for mixing the vaporized fuel with air, the improvement comprising:

an inner member positioned coextensive with the tubular body having an air-pervious portion and an end portion, said end portion being substantially air-impervious and including an aperture proximate the ignition means, said end portion diverting most of the vaporized fuel/air mixture through said air-pervious portion of said inner member;

an outer member, positioned coextensively with the tubular body and concentrically disposed about said inner member, said outer member having an air-pervious portion; and

a catalytic substrate disposed between said air-pervious portions of said inner and outer members.

4,361,134

SOLAR ENERGY COLLECTOR ASSEMBLY AND SUB-ASSEMBLIES THEREOF

John C. Bowen, Huntingdon Valley, Pa., assignor to Ametek, Inc., New York, N.Y.

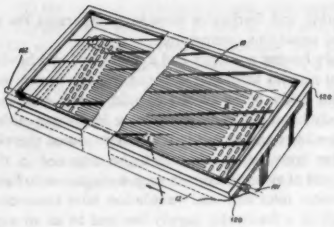
Division of Ser. No. 935,406, Aug. 21, 1978, Pat. No. 4,201,190. This application Nov. 15, 1979, Ser. No. 94,648

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—417 **11 Claims**

1. In a solar energy collector assembly including elongated

side members having a top and bottom edge, a transparent sheet top cover member disposed at the top of said side members, and a bottom closure member disposed at the bottom of said side members, said side members, transparent sheet and closure member together forming an enclosed space housing within which is disposed a solar energy collector means, the improvement consisting of top cover securing and sealing means comprising a seal engaging the bottom surface of said top cover along and inward of the periphery thereof and clamping means pressing said top cover downwardly into



engagement with said seal, the edge of said bottom surface between said seal and said periphery being free of engagement with any mating surface to prevent retention of condensate thereon, wherein said top cover securing and sealing means include a gasket resting on an inwardly turned upper flange of said side members, said clamping means extends upwardly from said side member and overlies the outer edge of the upper surface of said top cover, and the outer edge of said top cover extends outward of said gasket, said side member further including means for permitting the escape of condensate collected at the outer edge of said top cover.

4,361,135

COOPERATIVE HEAT TRANSFER AND GROUND COUPLED STORAGE SYSTEM

Philip D. Metz, Rocky Point, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 37,077, May 8, 1979, abandoned. This application Jan. 12, 1981, Ser. No. 224,233

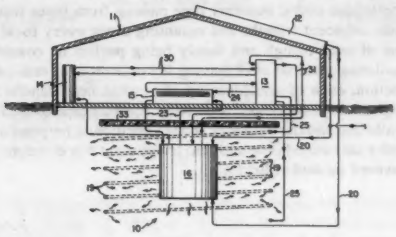
Int. Cl.³ F24J *3/02*; F25D *23/12*

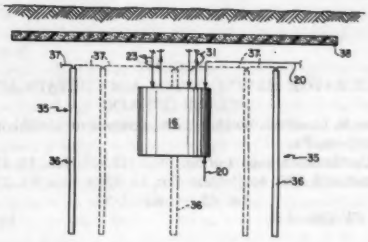
U.S. Cl. 126—437 **10 Claims**

1. A cooperative ground coupled heat storage and retrieval system comprising:

(a) a tank capable of storing a substantial quantity of fluid, said tank being located in the ground below the freezing level and above the water table and being constructed to permit conduction of heat therefrom into the surrounding ground; and

(b) circumferential heat transfer means for the transfer of heat to and from the ground surrounding said tank, said means further comprising a plurality of vertically arranged deep wells each consisting of a casing, fluid inlet means at the top of said casings, and fluid outlet means extending into said casings generally the entire length thereof to withdraw water from the bottom of said casings, and means for the interconnecting of the inlet and outlet means of said casings such that a fluid heat transfer medium may be circulated into the top of each casing and withdrawn from the bottom of said casing and transmitted into the top of an adjacent casing, said wells being con-





structed to allow the flow of heat between the ground and said heat transfer fluid and each being spaced a predetermined distance from said tank, said distance being selected so that heat deposited in said tank during the warmer, sunnier months and conducted into the ground will reach said wells during the cooler, darker months, whereby the heat may be retrieved for use as it is needed during the heating season.

4,361,136

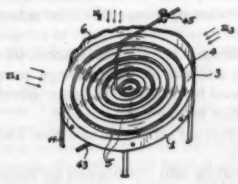
CONCENTRIC SOLAR COLLECTOR

Linus Huang, 10-4 Fl., No. 62, Chang Chun Rd., Taipei, Taiwan

Filed Aug. 26, 1980, Ser. No. 181,358

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—438 **3 Claims**



1. A concentric solar collector comprising a round disk, an insulating substrate, a refective plate, a coiled absorber pipe, plurality of vertical heat-transfer plates and a transparent top envelope said round disk serving as a base and being formed as a round recess to insert and bond said insulating substrate, said insulating substrate being moulded to form plurality of concen-

tric parabolic troughs facing upwards, said reflective plate being moulded with plurality of concentric parabolic troughs each corresponding to and engaged with each trough of said insulating substrate which is bonded under said reflective plate by adhesive, said coiled absorber pipe being led from an outside piping system to pass through said round disk, said substrate and the center of said reflective plate and then wound at a bending angle to extend along the focal circle line on the reflective trough and subsequently wound outwards to form a continuous coiled absorber pipe passing from inner trough to outer adjacent troughs and mounting along every focal circle line of each trough and finally being packed or coated with insulating material after leaving the collector for end-use connection, each of said plurality of vertical heat-transfer plates respectively connecting said coiled absorber pipe on each focal circle line and the parabolic trough positioned perpendicularly under said coiled pipe and said transparent top envelope being covered on said collector.

4,361,137

INCUBATOR HAVING WARM AIR CURTAIN ACROSS ACCESS OPENING

James R. Grosholz, Solebury, Pa., assignor to Air-Shields, Inc., Hatboro, Pa.

Continuation-in-part of Ser. No. 112,008, Jan. 14, 1980, abandoned. This application Jan. 15, 1981, Ser. No. 225,261

Int. Cl.³ A61G *11/00*

U.S. Cl. 128—1 B **19 Claims**

1. An incubator comprising:

a base having an infant support and three air flow passage means for permitting air flow between the space beneath said infant support and the space above said infant support, the first and second air flow passage means opening at opposite ends of said infant support and the third air flow passage means opening at the front side of said infant support;

a hood surmounting said base and adapted to enclose said infant support and said air flow passage means, the front wall of said hood having an access door movable between a closed posltion and an open position;

a source of conditioned air within said base and below said infant support;

means for circulating said conditioned air from below said infant support into said hood through said first and third air flow passage means and back to below said infant support through said second air flow passage means;

and sealing means responsive to movements of said door for sealing said third air flow passage means when said door is in said closed position and for uncovering said third air flow passage means when said door is in said open position.

4,361,138

VENTILATION/FEEDWATER SWITCHING APPARATUS FOR ENDOSCOPE

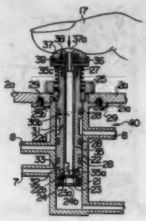
Kunio Kinoshita, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Japan

Filed Dec. 16, 1980, Ser. No. 216,943

Claims priority, application Japan, Mar. 31, 1980, 55-42592[U]; Apr. 8, 1980, 55-46107

Int. Cl.³ A61B *1/12*

U.S. Cl. 128—4 **6 Claims**



1. A ventilation and feedwater switching apparatus for an endoscope, said apparatus comprising:

a tubular body having an upper and a lower end and having an axis that extends from said upper to said lower end; and said tubular body being closed at said lower end; said tubular body having a feedwater inlet, a feedwater outlet, a ventilation inlet and a ventilation outlet formed therein; said tubular body being adapted to be disposed in the operating end of an endoscope in such a manner as to have said feedwater inlet and said ventilation inlet connected respectively to a feedwater supply line and to an air supply line of an endoscope in which said apparatus is disposed, and in such a manner as to have said feedwater outlet and said ventilation outlet connected respectively to a feedwater tube and a ventilation tube of the endoscope;

a sliding valve body having a central bore and received axially slidably, sealingly and removably in said tubular body; said sliding valve body having an upper and a lower end, its said lower end being received in said tubular body; said central bore communicating with the exterior of an endoscope in which said apparatus is disposed; and said sliding valve body having an air delivery port formed therein, said central bore communicating via said air delivery port with said ventilation outlet of said tubular body; said sliding valve body having a groove formed therein in such a manner as to permit said feedwater inlet and said feedwater outlet of said tubular body to communicate via said groove when said sliding valve body is in a first axial position in said tubular body; and said sliding valve body having a passage defined therein for permitting said ventilation inlet of said tubular body to communicate with said central bore when said sliding valve body is in a second axial position in said tubular body;

a check valve body detachably disposed at said lower end of said sliding valve body for closing said air delivery port in such a manner that if the communication of said central bore with the exterior of an endoscope in which said apparatus is disposed is blocked, the increasing internal air pressure in said central bore will force said check valve body to move to allow air to pass from said central bore to said ventilation outlet, thereby to allow the air to be fed into a coeliac cavity through the distal end of the endoscope; and

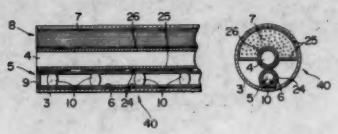
a spring urging said sliding valve body to maintain it in said second axial position.

4,361,139

SCIRROSCOPE

Takeji Takagi, Machida, Japan, assignor to Olympus Optical Company Ltd., Japan

Filed Jul. 31, 1980, Ser. No. 174,236
Claims priority, application Japan, Nov. 20, 1979, 54-150521
Int. Cl.³ A61B 1/06
U.S. Cl. 128—6 9 Claims



1. A scirroscope comprising:

(A) a rigid, non-flexible outer tubing;

(B) a plurality of articles housed in said tubing, said articles including an observation optical system and an illumination optical system;

(C) an elastic, resilient, shock absorbing member covering at least one of:

(1) the internal periphery of said rigid outer tubing; and

(2) the outer periphery of one of said articles;

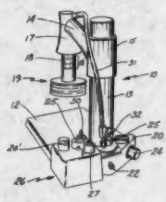
(D) said member serving to attenuate and absorb external shock and vibrations transmitted through said rigid outer tubing so that at least one of said articles is mechanically insulated from external mechanical shock and vibrations applied to said rigid outer tubing, said member also serving as a buffer that permits differences in thermal expansion of components of said scirroscope to occur without producing damage to said scirroscope.

4,361,140

CARDIOPULMONARY RESUSCITATOR MASSAGER PAD

Clare E. Barkalow, Comstock Park, Mich., assignor to Michigan Instruments, Inc., Grand Rapids, Mich.

Filed Mar. 3, 1980, Ser. No. 126,878
Int. Cl.³ A61H 31/00
U.S. Cl. 128—53 11 Claims



1. A cardiopulmonary resuscitator comprising in combination:

compressor means including a reciprocating piston for periodically applying a compressive force to a patient's chest;

ventilator means for periodically ventilating the patient's lungs; and

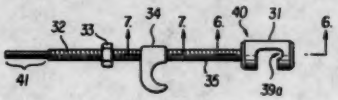
a compressible fluid filled enclosure disposed on the end of said reciprocating piston for compression between said piston and the patient's chest, said enclosure being filled with a substantially incompressible fluid and said enclosure comprising a nonisoelastic structure that is deformable in directions parallel to the path of travel of said reciprocating compressor piston and that is rigid in directions transverse to the path of travel of said piston, whereby the compressive force of said piston is evenly distributed over a large area on the patient's chest while providing direct correspondence between the displacement of said piston and the deflection of the patient's chest.

4,361,141

SCOLIOSIS TRANSVERSE TRACTION ASSEMBLY

Gary D. Tanner, Warsaw, Ind., assignor to Zimmer USA, Inc., Warsaw, Ind.

Filed Jul. 27, 1979, Ser. No. 61,344
Int. Cl.³ A61F 5/04
U.S. Cl. 128—69 11 Claims



1. In an apparatus for the correction of scoliotic curvature of the spinal column, including a first vertically positioned spinal rod for engaging a concave side of the spinal column, a second vertically positioned spinal rod for engaging a convex side of the spinal column, and a tensioning means for engaging the first spinal rod and the second spinal rod, said tensioning means comprising:

(a) a transverse threaded rod having first and second ends;

(b) a basket hook;

(c) a swivel means interconnecting the first end of the transverse rod and the basket hook, said swivel means allowing rotation of the transverse threaded rod about its longitudinal axis within the basket hook, said swivel means including a knob portion integrally connected to the first end of the transverse rod, said knob including a tapered portion, tapering outward from the transverse rod, and said basket hook including a seat of complementary shape to the knob for engaging the knob and easily allowing rotation of the knob within the seat; and

(d) a hook means threadably engaging the transverse threaded rod between the first and second ends thereof whereby the basket hook engages one of the spinal rods and the hook means engages the other spinal rod and rotation of the transverse threaded rod about its longitudinal axis causes the first end of the transverse threaded rod to swivel within the basket hook and further causes the hook means to move along the transverse threaded rod due to the threading engagement between the hook means and the transverse threaded rod, thereby forming a tensioned interconnection between the first spinal rod and the second spinal rod.

4,361,142

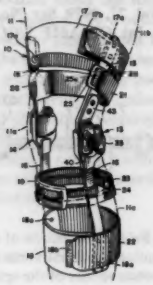
KNEE ORTHOSIS AND JOINT CONSTRUCTION THEREFOR

Jack L. Lewis, Evanston; Carl M. Patrnchak; William D. Lew, both of Chicago, all of Ill., and George T. Shybut, Brookline, Mass., assignors to Northwestern University, Evanston, Ill.

Filed Aug. 20, 1981, Ser. No. 294,445
Int. Cl.³ A61F 3/00
U.S. Cl. 128—80 C 36 Claims

1. An orthotic knee joint assembly comprising a rigid planar femoral member having a head portion with a narrow arcuate bearing surface of varying radii of curvature and having an arm portion projecting from said head portion and adapted to extend upwardly alongside a wearer's upper leg; a rigid tibial member having a body portion and an arm portion adapted to extend downwardly alongside a wearer's lower leg; said body portion having a pair of planar side walls spaced apart to define a narrow open-topped recess slidably receiving said head portion and having an arcuate camming surface engaging said bearing surface for guiding movement of said members between extension and flexion along constantly changing instantaneous axes of rotation, said bearing surface being slidable

posteriorly and anteriorly along said camming surface when said members are in flexion; a rigid anchor plate extending alongside one of said side walls and having a connecting portion secured to said arm portion of said femoral member; and at least one flexible and non-stretchable strap having a lower end secured to said one side wall at a selected connecting point and



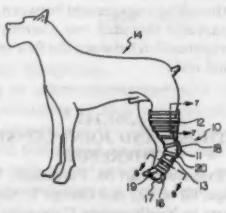
having an upper end secured to said anchor plate at another selected connecting point; said strap being mounted for tensioning and untensioning as said members are moved between extension and flexion to exert a force for guiding said bearing surface with respect to said camming surface during articulation of a patient's knee.

4,361,143

SPLINT FOR HIND LEG OF AN ANIMAL

Richard M. Nelson, 23206 Marydale Dr., Elkhart, Ind. 46515

Filed Apr. 20, 1981, Ser. No. 255,900
Int. Cl.³ A61F 5/04
U.S. Cl. 128—87 R **4 Claims**



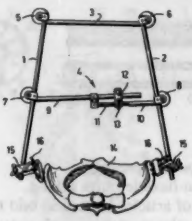
1. A splint for a hind leg of an animal comprising an elongated rigid member having a shape substantially conforming to the shape of the medial or lateral side of an animal hind leg and having a bend intermediate its ends shaped to receive the stifle joint of the leg, said member being of substantially C-shape in cross section and of a size and interior shape to provide partial enclosure of said animal hind leg and extend at the posterior surface of the leg, said member being progressively enlarged upwardly and outwardly above said bend to receive the thigh of said hind leg, said member being tapered downwardly below said bend to receive the calf of said hind leg, said member being enlarged at its lower end to receive with clearance and project endwise beyond and below the foot or paw of said hind leg.

4,361,144

EXTERNAL COMPRESSION FRAME FOR STABILIZING UNSTABLE PELVIC FRACTURES

Pär E. V. Slätis, Ripvägen 11, 02700 Grankulla, and Erkki O. Karaharju, Soihtupolku 3 A, 00670 Helsinki 67, both of Finland

Filed Jun. 2, 1980, Ser. No. 155,765
Int. Cl.³ A61F 5/04
U.S. Cl. 128—92 A **7 Claims**



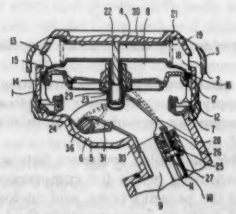
1. A compression frame for fixing the pelvis when treating pelvic fractures, said frame, when in an upright position, comprising two substantially vertical bars (1,2) and two substantially horizontal transverse bars (3,4), the vertical bars having lower end portions attached to the pelvis and upper end portions connected to end portions of one (3) of the transverse bars, a second (4) of the transverse bars being adjustable in length and being connected to the vertical bars (1 and 2) so as to form a trapezoidal configuration, articulation means (5–8) for interconnecting said vertical bars and said transverse bars, said articulation means having first and second fixture elements with through bores for receiving respective ones of said bars, said fixture elements being so anchored to the bars that a displacement of the fixture elements in the longitudinal direction of the bars is not possible, said fixture elements while so anchored allowing relative angular movement between the vertical and transverse bars connected by said fixture elements so that the angle between the bars and the compression force exerted by the bars on the pelvis are adjustable.

4,361,145

RESPIRATOR MASK

Staffan Ekström, Lidingö, and Hans Wettergren, Södertälje, both of Sweden, assignors to AGA Aktiebolag, Lidingö, Sweden

Filed Oct. 8, 1980, Ser. No. 195,164
Claims priority, application Sweden, Oct. 9, 1979, 7908339
Int. Cl.³ A62B 7/04
U.S. Cl. 128—204.26 **3 Claims**



1. A respirator mask comprising:
a housing including an exhalation chamber having an exhaust outlet, and an inlet chamber forming a breathing space and having passage means adapted to communicate with a user's respiratory organs;
a normally closed inlet valve connected to said inlet cham-

ber for supplying a source of breathing air to the inlet chamber to provide pressure therein;

means for establishing a gauge pressure in said inlet chamber including a movable member mounted in said housing and separating said inlet chamber from said exhalation chamber, biasing means biasing said movable member toward said inlet chamber, means operatively associated with said movable member for actuating said inlet valve to supply pressure to said inlet chamber when said movable member is moved into said inlet chamber and for releasing pressure from said inlet chamber to said exhaust outlet when said movable member is moved into said exhalation chamber a predetermined distance wherein a gauge pressure is established and released in said inlet chamber in response to movement of said movable member; and

detent means mounted in said housing for moving and maintaining said movable member towards said exhalation chamber against said biasing means whereby said inlet valve means is maintained in its closed position, said detent means including means for releasing said movable member in response to a user's inhalation effort in said inlet chamber whereby said inlet valve opens and said gauge pressure is re-established.

4,361,146

FILTERING RESPIRATOR

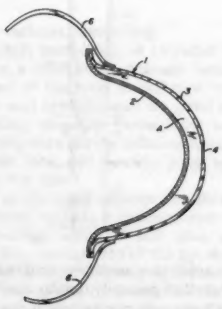
Bernd Woicke, Berlin, Fed. Rep. of Germany, assignor to Auergesellschaft GmbH, Berlin, Fed. Rep. of Germany

Filed Sep. 18, 1980, Ser. No. 188,337

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1979, 2938726

Int. Cl.³ A62B 7/10

U.S. Cl. 128—206.12 **1 Claim**



1. A filtering respirator comprising a mask for protecting the breathing passages of a user from contaminated environmental atmosphere, the mask being formed from a casing of air-impervious material adapted to fit around the nose and mouth areas, and a filter sheet inside said casing also large enough to fit around the nose and mouth areas and sealed at its periphery to the casing, the rest of the filter sheet being spaced inwardly from the casing to form an interspace between time, and said casing being provided with only one respiration opening therethrough spaced outwardly from said filter sheet and connecting said interspace with the ambient atmosphere surrounding the mask, for inhalation and exhalation, said opening being located centrally of the casing and having a size small enough to produce a jet stream of exhaled air of sufficient velocity to carry that air away from the mask far enough to prevent it from being inhaled during the next inhalation.

4,361,147

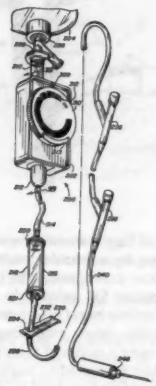
FLOW CONTROL DEVICE FOR ADMINISTRATION OF INTRAVENOUS FLUIDS

Jerry L. Aslanian, Phoenix, and Jody L. Numbers, Scottsdale, both of Ariz., assignors to Master Medical Corporation, Phoenix, Ariz.

Continuation-in-part of Ser. No. 5,313, Jan. 22, 1979, Pat. No. 4,294,246. This application Nov. 24, 1980, Ser. No. 209,604

Int. Cl.³ A61M 5/00

U.S. Cl. 128—214 E **7 Claims**



1. An IV system for accurately establishing and maintaining pre-determined administration flow rates between a purge and "off" position from a source of fluid having a puncturable seal, said system comprising:

(a) a flow metering valve including:

(i) a housing defining a fluid passageway having opposite upper and lower ends, said passageway including a valving surface;

(ii) a metering member having a body axially moveable relative to said valving surface, said metering member defining a flow metering notch in one surface, said notch having a cross-sectional area which varies axially along said member for metering flow therealong, said metering member further defining a flow passageway for establishing a purge position, said metering member having a first closed position with said body blocking flow at said valving surface, a second purge position with flow across said valving surface at said flow passageway and a third metering position with flow across said valving surface through said notch, said second purge position establishing a greater flow rate than said third metering position;

(iii) actuating means cooperative with said metering member to axially progressively displace said member relative to said valving surface to establish continuous and infinite flow metering along said notch portion of said flow passage in said third position whereby the user can establish a pre-determined flow rate;

(b) an upper drip chamber connected to said upper end having piercing means for puncturing said seal;

(c) a lower drip chamber connected to the said lower end of said passageway;

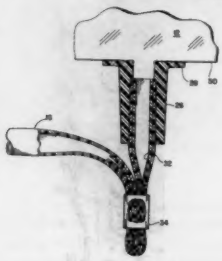
(d) tubing connected to said lower drip chamber terminating at connector means adapted to receive administration means; and

(e) clamp means associated with said tubing.

4,361,148
FLEXIBLE CONDUIT WITH RELEASABLE SEALING MEANS

John E. Shackleford, Walnut Creek, and Willie J. Lewis, Oakland, both of Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Dec. 3, 1980, Ser. No. 212,481
Int. Cl.³ A61M 5/00
U.S. Cl. 128—214 D 7 Claims

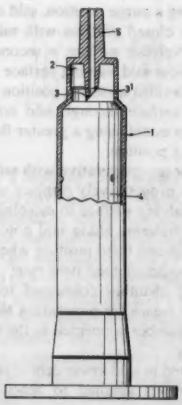


1. A multiple blood bag system comprising a first bag connected to a second bag by a flexible conduit having an internal diameter for fluid flow communication between the first and second bags and means for releasably sealing the conduit which comprises a flexible insert positioned within a section of the conduit, said flexible insert extending across said internal diameter and comprising a material which does not block said internal diameter when subjected to sterilization temperatures, the section of the conduit being bent back on itself, at least to a position wherein closure is established, and maintained in this position by a releasable clamping means to prevent fluid flow through the conduit.

4,361,149
INJECTION SYRINGE

Hans Wörder, Bünde, Fed. Rep. of Germany, assignor to Bünder Glas GmbH, Bünde, Fed. Rep. of Germany

Continuation of Ser. No. 133,661, Mar. 25, 1980, abandoned, which is a continuation of Ser. No. 934,651, Aug. 17, 1978, abandoned. This application Apr. 22, 1981, Ser. No. 256,514
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1977, 2738676
Int. Cl.³ A61M 5/00
U.S. Cl. 128—215 5 Claims



1. In an injection syringe of the kind having a body formed with a chamber for receiving by axial movement a cylindrical ampoule of the kind having a sealing plug at one end serving as a piston and a piercable seal at the other end, the provision of

(a) a piercing point extending axially within the body into the chamber capable of entry into said ampoule by penetrating said seal when the ampoule is pressed axially into said chamber,

(b) said piercing point having a bore therethrough to effect communication of the interior of said ampoule with the exterior of the syringe body when the piercing point has penetrated the seal,

(c) the outer surface of said piercing point being inwardly tapered over the entire length thereof, whereby the compression stress between the tapered piercing point and pierced seal ensures sealing thereinbetween,

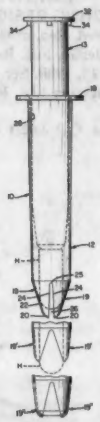
(d) said piercing point being formed integrally with said syringe body as a one-piece plastic unit, and

(e) a conical shaped projection integral with said body for reception of a needle assembly, said projection having therein a continuation of the bore within said piercing point.

4,361,150
EXTRUDED PLASTIC HYGIENIC APPLICATOR

Joseph A. Voss, 22 Princeton Dr., Rancho Mirage, Calif. 92270

Filed Apr. 7, 1980, Ser. No. 138,117
Int. Cl.³ A61F 15/00
U.S. Cl. 128—263 22 Claims



1. A hygienic applicator assembly comprising:

a thin-walled shell of generally tubular configuration having an outer wall along its greater length adapted to contain a hygienic medium therein and a generally dome-shaped end at one end of said shell defined by a series of resilient fingers converging forwardly in a radial direction from the one end of said outer wall, each of said fingers having inclined side edges converging forwardly toward one another in a generally circumferential direction to terminate in a common, rounded terminal end, and a clearance space formed between the inclined side edges of adjacent said fingers; and

male inserter means of a length corresponding substantially to that of said thin-walled shell, said male inserter means being movable in close-fitting telescoping relation through the one end of said thin-walled shell, said male inserter means having a convergent sidewall adjacent to its leading end conforming substantially to the contour and length of said resilient fingers, said convergent sidewall terminating in a closed, forwardly convergent lead-

ing end conforming substantially to the contour of said rounded terminal end of said resilient fingers.

4,361,151
TAMPON

Harry G. Fitzgerald, Green Bay, Wis., assignor to Tech-Tran, Inc., Green Bay, Wis.

Filed Dec. 5, 1980, Ser. No. 213,256
Int. Cl.³ A61F *13/20*
U.S. Cl. 128—285 **16 Claims**

1. An absorbent tampon comprising plural slivers of absorbent material braided together to form an absorbent braided body.

4,361,152
CATHETER

Bhupendra C. Patel, Elgin, Ill., assignor to The Kendall Company, Walpole, Mass.

Continuation of Ser. No. 930,386, Aug. 2, 1978, abandoned, which is a division of Ser. No. 767,425, Feb. 10, 1977, abandoned, which is a division of Ser. No. 581,251, May 27, 1975, abandoned. This application May 5, 1980, Ser. No. 146,421
Int. Cl.³ A61M *25/00*
U.S. Cl. 604—99 **2 Claims**

1. A retention catheter, comprising:

an elongated shaft comprising an extruded tube having an outer surface, a distal end, a drainage lumen extending to the distal end of the tube, an inflation lumen extending through the wall of the tube to the distal end of the tube, and an opening extending through the wall of the tube communicating between the inflation lumen and the outer surface of the tube, said opening being spaced from the distal end of the tube;

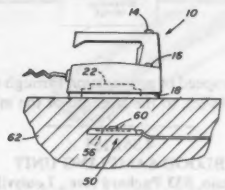
a tip secured to the tube adjacent its distal end, said tip having an outer surface, a drainage eye communicating with the drainage lumen of said tube, and an annular shoulder at the proximal end of the tip, the axially-facing surface of said shoulder abutting against and being secured to the distal end of said tube, and with said shoulder closing a distal end of the inflation lumen; and

an expansible annular sleeve of one-piece construction with said tip, said sleeve extending from the tip adjacent said shoulder at the outer surface of the tip, the distal end of said sleeve being located at a juncture with said shoulder, said sleeve distal end including an interior surface which is secured to the outer surface of the tube distal end, and the proximal end of the sleeve being secured to the outer surface of the tube circumferentially around the shaft, said opening being located intermediate said sleeve distal and proximal ends, said shoulder and sleeve distal end being arranged to enshroud said tube distal end thus to provide a catheter tip structure less likely to be separated from said tube during use, said opening communicating between the inflation lumen and the outer surface of the tube being located at a point remote from said tube distal end, where said tube distal end is secured to said shoulder axially-facing surface, and remote from said sleeve proximal end, where said sleeve proximal end is secured to the outer surface of said tube, whereby the patency of said opening will not be compromised during the assembly of said tip with said tube.

4,361,153
IMPLANT TELEMETRY SYSTEM

Chester D. Slocum, and John R. Batty, Jr., both of Miami, Fla., assignors to Cordis Corporation, Miami, Fla.

Filed May 27, 1980, Ser. No. 153,093
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 P **30 Claims**



1. An apparatus for communicating variable information to an external device from an electronic stimulator implanted in a living human patient, comprising

an external unit including means for transmitting a carrier signal,

a hermetically sealed fully implantable enclosure adapted to be implanted at a fixed location in the patient's body, means within said enclosure for generating stimulator outputs,

a transponder within said enclosure including tuned resonant circuit means for resonating at the frequency of said carrier signal so as to re-radiate a signal at the frequency of said carrier signal, and means for superimposing an information signal on the reflected signal by altering the resonance of said tuned circuit means in accordance with an information signal,

said superimposing means including a variable impedance load connected across said tuned circuit and means for varying the impedance of said load in accordance with an information signal,

said external unit further including pickup means for receiving the reflected signal from said transponder and means for recovering the information signal superimposed thereon,

said receiving means including means reponsive to said reflected signal from said transponder for producing on associated analog output signal, and

said recovering means including phase shift detector means responsive to said analog output signal for producing an output signal related to the relative phase angle thereof.

4,361,154
METHOD FOR ESTABLISHING, IN VIVO, BONE STRENGTH

George W. Pratt, Jr., Wayland, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

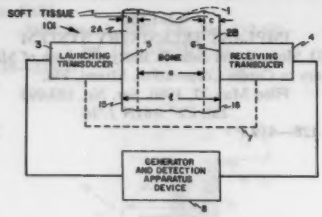
Continuation-in-part of Ser. No. 928,654, Jul. 28, 1978, Pat. No. 4,233,845. This application Jun. 15, 1979, Ser. No. 48,580
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **5 Claims**

1. A method of establishing, in vivo, the strength of a member, that comprises:

(a) launching an acoustic pulse through the member and surrounding soft tissue;

(b) determining the propagation time of the acoustic pulse in the soft tissue and the total propagation time through the soft issue and the member;

(c) from the two propagation times thus determined, determining the speed of propagation of the acoustic pulse through the member; and



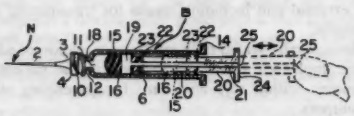
(d) relating the speed of propagation through the member, as determined in (c), to the strength of the member.

4,361,155

BLOOD SAMPLING UNIT

Frank W. Anastasio, 833 Packard Ave., Louisville, Ky. 40217

Filed Oct. 29, 1980, Ser. No. 201,991
Int. Cl.³ A61B 5/14
U.S. Cl. 128—763 **7 Claims**



1. A blood sampling unit comprising:

A. a barrel member defining a substantially tubular member of uniform diameter and having:

1. an internal wall section, and

2. a proximal end of reduced internal diameter and including a projecting hollow neck;

B. a hollow needle having a piercing end and an elongated hollow shank portion and a connecting hub for connection to said hollow neck of said barrel;

C. a floating stopper having at least one peripheral sealing ring for rubbing engagement with the internal walls of said tubular member and for moving in either direction along the longitudinal axis of said tubular member;

D. a plunger member having:

1. sealing means for close sliding engagement with the interior walls of said barrel member and,

2. a central gas channel extending axially through said plunger member, said gas channel opening directly into said barrel member and having an exterior orifice for introduction and evacuation of air.

4,361,156

METHOD AND APPLICATOR FOR APPLYING GLUE TO A TRAVELLING STREAM OF TIPPING PAPER

Floyd V. Hall, Durham, N.C., assignor to Liggett Group Inc., Montvale, N.J.

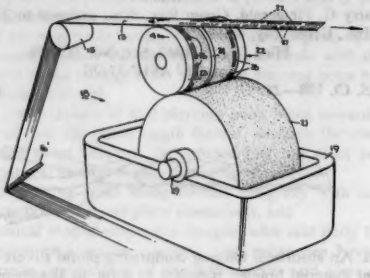
Filed Jun. 26, 1980, Ser. No. 163,065
Int. Cl.³ A24C 1/34
U.S. Cl. 131—90 **13 Claims**

1. An applicator for applying glue to a travelling stream of tipping papers, said applicator including:

a glue pot containing a reservoir of glue;

a transfer roll rotatably mounted on said glue pot and having a circumferential surface projecting into said pot to receive glue thereon; and

an applicator roll rotatably mounted on and over said transfer roll to receive a layer of glue thereon, said applicator roll having a pair of rims disposed in rolling contact with said transfer roll, each said rim being disposed at a respective edge of said applicator roll, at



least one row circumferentially spaced apart elongated grooves therein spaced laterally from said rims, each said groove being sized and shaped to receive a stripe of glue therein.

4,361,157

METHOD OF CURLING NEGROID HAIR WITHOUT ROLLERS

Odie R. James, 3817 Fannin, Houston, Tex. 77004

Continuation of Ser. No. 17,113, Mar. 5, 1979, abandoned. This application Oct. 20, 1980, Ser. No. 198,479
Int. Cl.³ A45D 7/00
U.S. Cl. 132—7 **7 Claims**

1. A method of producing soft, relatively loose curls in naturally kinky hair without use of curlers or rollers comprising:

wetting the hair thoroughly,

applying thoroughly and uniformly to the hair a solution of a chemical reagent for straightening the hair,

allowing said straightening reagent to remain on the hair for a predetermined period of about 70–90% of the time required for complete straightening of the hair,

said predetermined period of time varying according to the degree of coarseness of the hair as determined empirically by measuring the time required for completely straightening fine or medium or coarse hair completely,

said predetermined period of time being about 13 minutes for fine hair, about 15 minutes for medium hair, and about 18–20 minutes for coarse hair,

combing the hair out straight during the time that said chemical hair-straightening reagent remains thereon,

at the end of the aforementioned time, before the time that the hair is fully straightened, shampooing and rinsing the hair with a shampoo and rinse, at least one of which contains a chemical reagent for neutralizing said hair straightening reagent and setting said hair,

the steps prior to this point taking about one-half hour, and

allowing said hair to dry in the combed out state without application of forced heated air or the use of curlers or rollers to yield soft curls.

4,361,158

HAIR REPAIR HOOD

Gerald W. Baker, 609 N. 5th, Okemah, Okla. 74859

Filed Oct. 15, 1979, Ser. No. 84,906
Int. Cl.³ A45D 1/00
U.S. Cl. 132—9 **9 Claims**

1. A shampooing apparatus comprising an open ended hood means having spray hole means provided therein for receiving

spray means therethrough, water conduit means operably connected with the spray means for suppling water thereto during a shampooing operation, soap dispensing means operably connected with the hood means for supplying soap to the interior thereof during said shampooing operation, valve means interposed in said water conduit means for selectively testing the water temperature prior to directing the water to

the spray means, said hood means being provided with opening means therein for access to the interior thereof whereby the hands of an operator may be inserted through said opening means for facilitating the shampooing operation, drain hose means operably connected to the hood means and having one end open to the interior of the hood means and the opposite end open for discharge of water from said hood means during the shampooing operation.

4,361,159

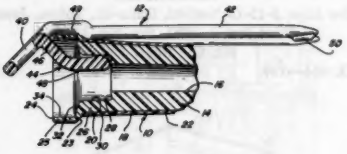
HAIR ROLLER

Phillip S. Stefaniak, Evanston, Ill., assignor to Helene Curtis Industries, Inc., Chicago, Ill.

Filed Sep. 15, 1980, Ser. No. 184,252

Int. Cl.³ A45D *2/08*

U.S. Cl. 132—41 R **2 Claims**



1. A hair roller comprising a tubular body defining an outer surface for receiving hair to be wound thereon, said outer surface being free of projections or depressions exceeding 0.010 inches in height or depth and being formed of a resilient, elastomeric, compressible, and non-porous silicone elastomer material having a Shore durometer A hardness of between about 20 and about 65 and said outer surface having a static coefficient of friction greater than about 50, measured at ambient temperature against dry hardwood on the James machine in accordance with ANSI/ASTM F 489-77, whereby hair will readily grip said outer surface to facilitate winding hair about said hair roller, said tubular body being open at both ends and having a central hair receiving portion and an outer shoulder at each end of said body on opposite sides of said central position, each of said shoulders having an outer diameter greater than the outer diameter of said central portion, each of said shoulders having an outside surface adapted to receive clip means for retaining the hair on the central hair receiving portion of the tubular body, wherein said clip means includes a handle and a plurality of fingers extending outwardly from said handle, said fingers being adapted to overlie said hair roller, said clip further having an arm extending outwardly from said handle and adapted to be received in said tubular body, each of said fingers having a stand off segment adjacent to said arm, said stand off segment being generally parallel to the remainder of said fingers and offset from the axis of each finger, the axis of said stand off segment being farther from said arm than the axis of the remainder of said fingers.

4,361,160

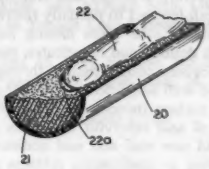
METHOD OF FORMING ARTIFICIAL FINGERNAILS

Thomas M. Bryce, 5225 Evanston Ave., Indianapolis, Ind. 46220

Filed Feb. 1, 1982, Ser. No. 344,768

Int. Cl.² A45D *29/00*

U.S. Cl. 132—73 **10 Claims**



1. A method of forming artificial fingernails which comprises the following steps:

forming a negative impression mold of a human finger;

making an artificial finger from said impression mold;

applying a layer of material shaped to resemble a portion of a fingernail to said artificial finger;

forming a master mold of said artificial finger and said layer of material;

adding artificial fingernail material into said master mold; and

placing said human finger in said master mold.

4,361,161

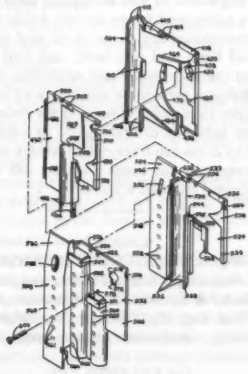
COIN HANDLING DEVICE

Raymond A. Johnson, Hot Springs, Ark., assignor to UMC Industries, Inc., Stamford, Conn.

Continuation of Ser. No. 36,335, May 4, 1979, abandoned. This application Sep. 4, 1981, Ser. No. 299,497

Int. Cl.³ G07D *3/00*; G07F *1/04*

U.S. Cl. 133—3 R **47 Claims**



1. A coin-handling device which can accommodate coins of a plurality of different denominations and which comprises a frame, a first wall which has a positioning surface thereon that interacts with a complementary surface on said frame to just partially restrain and position said first wall, a second wall which has a positioning surface thereon that interacts with a complementary surface on said first wall to just partially re-

strain and position said second wall, said second wall having a further surface thereof disposed in confronting, but spaced, relation with a further surface on said first wall to define a passageway for coins of one denomination whenever said positioning surface on said second wall and said complementary surface on said first wall interact to just partially restrain and position said second wall, a third wall which has a positioning surface thereon that interacts with a complementary surface on said second wall to just partially restrain and position said third wall, said third wall having a further surface thereof disposed in confronting, but spaced, relation with a still further surface on said second wall to define a passageway for coins of a second denomination whenever said positioning surface on said third wall and said complementary surface on said second wall interact to partially restrain and position said third wall, one of said walls having an additional surface thereon which defines, and constitutes, part of a reservoir for coins that receives coins passing through the passageway which said one wall helps define, another of said walls having an additional surface thereon which defines, and constitutes, another part of said reservoir for coins and said additional surface on said one wall and said additional surface on said other wall being in confronting relation and coacting effectively to define said reservoir for coins, said additional surface on said one wall and said additional surface on said other wall being aligned to define said reservoir for coins whenever said positioning surface on said first wall interacts with said complementary surface on said frame to just partially restrain and position said first wall and said positioning surface on said second wall interacts with said complementary surface on said first wall to just partially restrain and position said second wall and said positioning surface on said third wall interacts with said complementary surface on said second wall to just partially restrain and position said third wall, said additional surface on said one wall being displaced laterally relative to the further surface on said one wall and said additional surface on said other wall being displaced laterally relative to the further surface on said other wall, whereby coins moving through said passageway which said one wall helps to define will move laterally as they pass from said passageway into said reservoir for coins, and a single fastener which extends through all of said walls and engages said frame to coact with said positioning surfaces on said walls and said complementary surface on said frame to fixedly hold said walls in position relative to said frame, said fastener being readily securable to said frame to provide prompt securement of all of said walls to said frame and maintain alignment of said additional surfaces on said one and said other walls, said frame having a side wall, said positioning and complementary surfaces on said walls and frame being displaced from said side wall, and said fastener being displaced from said side wall, said additional surface and the passageway-defining surface on said one wall being molded as a unit so any coin passing said reservoir for coins does not have to pass a joint between discrete parts of said coin-handling device, whereby coins can freely pass through said passageway toward said reservoir for coins with no risk of being intercepted and stopped by such a joint.

4,361,162

SEQUENTIAL COIN DISPENSER

Marcel M. Brisebarre, Thoiry, France, assignor to ATS Advanced Technics & Systems, S.A., Lausanne, Switzerland

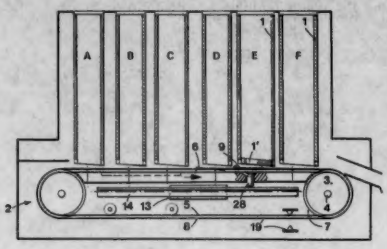
Filed Aug. 25, 1980, Ser. No. 180,959

Claims priority, application Switzerland, Sep. 3, 1979, 7963/79

Int. Cl.³ G07D *1/00*

U.S. Cl. 133—4 A **10 Claims**

1. Sequential coin dispenser comprising coin stacks, at least one per coin denomination, a rotating extraction mechanism comprising extraction fingers and a cam acting on these extraction fingers, an actuating device operable to displace said cam to effect extraction and a control circuit (16) interconnected with said actuating device for operation thereof, characterized in that in the extraction mechanism (2) the extraction fingers (9) are carried by first rotating means (8) so that each extraction finger (9) is moved successively under each stack (1) of coins, in that the cam (6) is carried by seconds means (5) driven by the first rotating means (8) and in that positioning means (25, 26, 27, 28) co-operate with the actuating device (13, 14, 8)



so that when such device is actuated, the second means (5) and the cam (6) thereof are freed from the first rotating means (8) which drive them and they come into a predetermined position, allowing the extraction fingers (9) still in motion to effect the extractions.

4,361,163

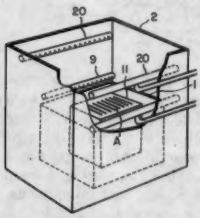
APPARATUS FOR WASHING SEMICONDUCTOR MATERIALS

Seiichiro Aigo, 3-15-13 Negishi, Daito-ku, Tokyo, Japan

Filed Jan. 2, 1981, Ser. No. 222,212

Int. Cl.³ B08B *3/02*

U.S. Cl. 134—199 **5 Claims**

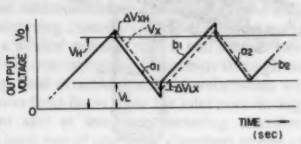


1. A washing device, particularly for washing articles such as processed semiconductor materials, comprising an outer case, a shallow washing container mounted in said outer case and having a bottom with a drain, a perforated carrier support plate mounted in said shallow washing container above said bottom so as to drain liquid through the perforations of said bottom and through said drain, the carrier container for articles to be washed positioned on said plate and being opened to expose the articles, a first set of shower tubes located at respective sides of said container over said plate and directing a shower spray inwardly against the articles in said carrier container, at least one second set of shower nozzle tubes located above said carrier container and directing a shower stream therebetween and in a direction toward said shower container.

4,361,164
METHOD OF DRIVING SOLENOID-OPERATED PROPORTIONAL CONTROL VALVE

Yasuyuki Sakakibara, Okazaki; Hisasi Kawai, Toyohashi; Kazuhiro Sakurai, and Kyo Hattori, both of Susono, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Aug. 25, 1980, Ser. No. 181,393
Claims priority, application Japan, Sep. 5, 1979, 54-113917
Int. Cl.³ F16K *31/02*
U.S. Cl. 137—14 **5 Claims**

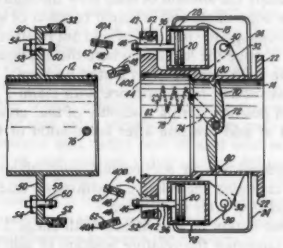


1. A method of driving a solenoid-operated proportional control valve of the kind in which a valve member is displaced in proportional relation to current supplied to a solenoid under control of a control signal, said method comprising adding a predetermined value to said control signal when said valve member starts to move to open said solenoid-operated proportional control valve from its full-closed position and subtracting a predetermined value from said control signal when said valve member starts to move to close said solenoid-operated proportional control valve from its full-open position.

4,361,165
BREAKAWAY PIPE COUPLING WITH AUTOMATICALLY CLOSED VALVES

John F. Flory, Morris Township, Morris County, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Aug. 7, 1980, Ser. No. 176,080
Int. Cl.³ F16K *17/40*
U.S. Cl. 137—69 **12 Claims**

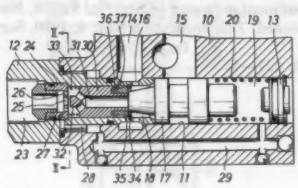


1. A pressure compensated pipeline coupling, comprising:
(a) first and second coupling sections, normally joined together such that fluid can flow through said coupling sections, each coupling section including a radially extending flange in axial overlapping relationship with the flange on the other coupling section;
(b) locking means between said coupling sections for securing said sections together, said locking means including a plurality of shear pins extending radially between said flanges, said shear pins being sized to fracture in response to tensile loads exceeding a predetermined limit, thus allowing said coupling sections to separate; and
(c) pressure compensation means associated with said locking means and said first and second coupling sections for exerting compressive force upon said locking means, said pressure compensation means including a plurality of cylinders mounted on said first coupling section externally thereof, each cylinder including an actuating rod extending through an associated aperture in one of said flanges and connected to the other said flange, each said actuating rod including split collar means located within its respective aperture prior to fracture of said shear pins, whereby upon fracture of said sheer pins and axial separation of said first and second coupling sections said split collar means are released and said rod is disengaged from said other flange, said cylinders being in fluid pressure communication with said fluid within said coupling sections.

4,361,166
FLOW CONTROLLING APPARATUS FOR POWER STEERING, OPERATING FLUID

Susumu Honaga, Aichi, and Akihiko Sato, Okazaki, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jan. 15, 1981, Ser. No. 225,263
Claims priority, application Japan, Jan. 24, 1980, 55-7541; Jun. 6, 1980, 55-76949
Int. Cl.³ G05D *11/00*
U.S. Cl. 137—117 **3 Claims**



1. A flow control apparatus for supplying pressurized fluid from an engine-driven pump to a power steering device and for returning an excess part of said pressurized fluid directly to said pump, comprising:
a housing;
a bore formed in said housing;
a supply passage formed in said housing to be opened into said bore for supplying said pressurized fluid from said engine-driven pump;
a bypass passage formed in said housing to be opened into said bore in spaced relationship with said supply passage for returning an excess part of said pressurized fluid directly to said pump;
a spool valve slidably received in said bore for controlling communication between said supply passage and said bypass passage;
first spring means disposed in said bore for urging said spool valve in a direction toward said supply passage;
a union fixedly secured to one end of said bore and having an inner portion extending inwardly of said bore toward said spool valve;
restricted passage means formed between said supply passage and said spool valve for causing a pressure differential thereacross as the flow of said pressurized fluid in said supply passage increases;
a throttle member fixedly inserted in said union and formed with first and second restricted passages;
a control spool slidably received in said union between said throttle member and said inner portion of said union and formed with a first fluid passage for fluidically communicating with said restricted passage means and said throttle member;
second spring means interposed in said union between said throttle member and said control spool for urging said control spool in a direction away from said throttle member;
said control spool being formed with a control stem to close said first restricted passage of said throttle member when said control spool is moved into abutment with said throttle member against said second spring means;

a delivery port formed in said union downstream of said throttle member and fluidically communicated with said power steering device;

a second fluid passage formed in said housing for fluidically communicating said first spring means-disposed bore with said delivery port so as to move said spool valve in response to a pressure differential across said throttle member; and

a third fluid passage formed on said inner portion of said union for applying said pressurized fluid in said supply passage to said control spool against said second spring means.

4,361,167

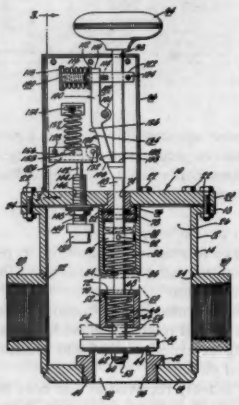
SNAP-ACTING DRAIN VALVE

Bohdan A. Harasewych, Flourtown, Pa., assignor to Ogontz Controls Company, Willow Grove, Pa.

Continuation-in-part of Ser. No. 92,610, Nov. 29, 1979, abandoned. This application Nov. 6, 1980, Ser. No. 204,548

Int. Cl.³ E03B *7/10*

U.S. Cl. 137—62 **18 Claims**



9. A snap opening drain valve for draining fluid from a fluid system upon the occurrence of a predetermined temperature condition of the fluid, comprising a valve body defining a fluid chamber, fluid port means in said valve body for admitting fluid from said fluid system into said chamber, a drain port in said valve body, a valve seat on said valve body associated with said drain port, a valve element adapted for cooperative engagement with said valve seat for controlling flow through said drain port, a valve stem connected with said valve element for movement of said element toward and away from said valve seat to close or open said drain port, spring means connected with said valve stem for urging said stem and valve element toward an open position, a pivotally mounted latching lever, a shoulder on said valve stem engageable by one end of said latching lever to hold said valve stem and valve element in the closed position against said valve seat, spring means for biasing said end of said latching lever away from said valve stem shoulder, a temperature sensitive actuator disposed on said valve body responsive to the temperature of the fluid within said valve body, and a pivotally mounted trigger lever controlled by said actuator, said trigger lever holding said latching lever in engagement with said valve stem shoulder until the temperature of the fluid in said valve body drops to a predetermined level.

4,361,168

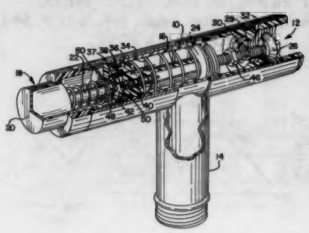
FLUSH VALVE CONSTRUCTION

Robert R. McCornack, Galesburg, Ill., assignor to Safe Automatic Flow Engineering, Inc., Galesburg, Ill.

Filed Oct. 19, 1981, Ser. No. 312,628

Int. Cl.³ F16K *43/00, 31/48*

U.S. Cl. 137—315 **4 Claims**



1. In a construction for controlling fluid flow through a jacket having a fluid inlet and a fluid outlet, a piston reciprocally movable within said jacket, a valve connected to the piston, a valve seat whereby movement of the piston operates to seat and unseat the valve for controlling passage of fluid between said inlet and outlet, a stop located upstream of said valve, a shaft supporting said stop, a stop seat defined by said jacket adjacent said inlet, and means for adjusting the position of said shaft for thereby seating and unseating said stop to shut off passage of fluid through said jacket independently of said valve, said means for adjusting including a threaded section defined by said shaft, and a threaded bore receiving said threaded section whereby rotation of said shaft moves said stop relative to said stop seat, the improvement comprising an extension of said threaded section of said shaft, a nut supported on said extension of said threaded section, said valve being movable along said shaft between the seated and unseated positions, said nut thereby limiting movement of said valve and piston whereby the amount of fluid flow through the construction can be controlled, and wherein rotation of said shaft also operates to change the position of said nut relative to said valve to thereby change the location where the nut limits movement of the valve with respect to its seated position.

2. A construction in accordance with claim **1** wherein said nut is set in position during assembly of said construction and maintained at said position after installation of the construction.

3. A construction in accordance with claim **2** including means for changing the relative positions on said shaft of said nut and said stop after installation.

4. A construction in accordance with claim **3** wherein said means for changing the relative position of said nut and stop include means for moving said stop into engagement with said stop seat whereby fluid flow will be prevented and said valve and piston can be removed form said jacket to provide access to said nut on said threaded shaft section.

4,361,169

PRESSURE COMPENSATED CONTROL VALVES

Arthur J. Williams, Youngstown, Ohio, assignor to Commercial Shearing, Inc., Youngstown, Ohio

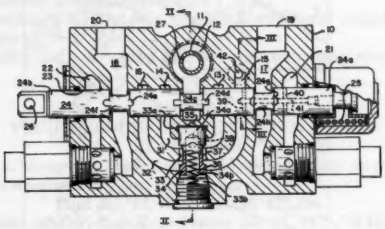
Filed Nov. 13, 1979, Ser. No. 93,848

Int. Cl.³ F15B *13/08*

U.S. Cl. 137—596.13 **30 Claims**

1. In a multiple section control valve bank a control valve working section and an inlet section and an outlet section on opposite sides of said working section that are operatively connected to provide smooth proportional metering control over a wide band of operating pressures and simultaneous metering operation of two or more fluid actuated devices from a single fluid pressure source, said control valve working

section having a pressure fluid inlet port on one side of said section, an inlet chamber connected to said inlet port, an outlet port on the opposite side of said section connected with said inlet port and chamber, first and second work ports adapted to be connected to a fluid actuated device, first and second work chambers connected to said ports and spaced on opposite sides of said inlet chamber, first and second exhaust chambers on opposite sides of said work chambers from the inlet chamber, at least one metering chamber between said work chambers, a pair of logic chambers with one chamber on each side of the at least one metering chamber between the at least one metering chamber and the work chambers, a main bore **23** extending through and interconnecting at least all of said exhaust, work, logic and metering chambers, a valve element movable in said bore from a neutral position to first and second work positions for selectively connecting said chambers through said bore and establishing fluid communication therebetween whereby in a work position fluid flows from the inlet port through said inlet chamber to said at least one metering chamber and then through at least one of said logic chambers to one of said work ports, said inlet section having an inlet port adapted to be connected to a source of fluid pressure, an outlet port and



chamber connected to said inlet port and to a valve section inlet port at all times, an exhaust port, a spaced by-pass chamber connected to said exhaust port, and a signal chamber between said exhaust port and by-pass chamber, a bore extending through and connecting said chambers in said inlet section, a valve member movable in said bore between said signal chamber and said by-pass chamber effective to control fluid communicating from the inlet to the outlet port and being movable to a by-pass position by-passing fluid from the inlet through the by-pass chamber to said exhaust port, biasing means opposing the movement of said valve member to said by-pass position, a connection between said outlet port of said inlet section and said inlet port of said control valve section delivering fluid therebetween, logic means connecting the signal chamber of said inlet section and a logic chamber of said control valve whereby the pressure in said signal chamber is varied in accordance with the difference between the pressure in the inlet port of the inlet section and the fluid pressure at said logic chamber to vary the biasing means opposing movement of said inlet section valve member whereby the flow of fluid from the inlet port to the outlet port of the inlet section is varied by by-passing fluid.

4,361,170

BUTTERFLY BYPASS VALVE

Kirk Peloza, Glen Ellyn, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 55,662, Jul. 9, 1979, abandoned. This application Feb. 26, 1981, Ser. No. 238,305

Int. Cl.³ F16K *1/22*

U.S. Cl. 137—625.29 **6 Claims**

1. A fluid valve for supplying pressurized fluid to a vehicle heating system heater core, said valve comprising:

(a) body means, said body means defining

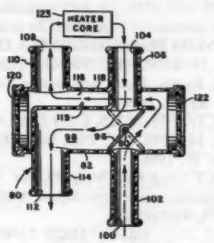
(i) an elongated fluid passageway,

(ii) first and second fluid ports in communication with said fluid passageway, said first and second fluid ports being disposed on opposite sides of said valve body,

(iii) a third fluid port in fluid communication with said fluid passageway and spaced longitudinally therealong from said first and second fluid ports,

(iv) a fourth fluid port in fluid communication with said fluid passageway and spaced longitudinally therealong from said first and second fluid ports,

(b) a valve member rotatably mounted to said valve body and located in said fluid passageway intermediate said first and second fluid ports, said valve member rotatable between a first position in fluid sealing engagement with first portions of said passageway and a second position in fluid sealing engagement with second portions of said passageway, such that in said first position said valve member permits fluid flow through said first port to flow through



said fourth fluid ports and flow through said second port to flow through said third fluid port, and in said second position said valve member permits fluid flow through said first port to flow through said third fluid ports and through said second and fourth fluid ports;

(c) said first and second ports are located generally at a first longitudinal station along said passageway defined by said valve member;

(d) said third and fourth ports are located generally at a second longitudinal station relative said passageway, said fourth port being in direct fluid communication with said passageway; and

(e) said body means further including auxiliary passageway means for communicating said third port with said elongated passageway at a location remote from said first longitudinal station.

4,361,171

WEAVING DEFECT DETECTOR

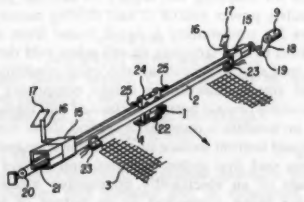
Tsutomu Fukuda, 785-1 Kunikane, Kamisocho, Kakogawashi, Japan

Filed Apr. 21, 1980, Ser. No. 142,376

Claims priority, application Japan, Jun. 27, 1979, 54-87017[U]; Jun. 27, 1979, 54-87018[U]; Jun. 27, 1979, 54-87019[U]; Jun. 27, 1979, 54-87020[U]

Int. Cl.³ D03D *51/18*

U.S. Cl. 139—348 **3 Claims**



1. A weaving detector for detecting weaving defects gener-

ated on the surface of a ground fabric of a carpet or rug moving a first direction, comprising:

at least one detector sensor;

means for moving said each at least one detector sensor in a second direction perpendicular to said first direction; and

a guide sled connected to all of said at least one said detector sensors and adapted to be positioned adjacent the surface of said ground fabric for maintaining said at least one sensor at a fixed distance from said fabric, said guide sled including upwardly inclined portions at each end in said second direction, whereby said upwardly inclined portions prevent defects from being caught by said guide sled, wherein there are at least two detector sensors spaced from one another in said first direction, wherein said at least two sensors move together and wherein said at least two sensors are adapted to issue a signal only when all of said sensors simultaneously detect a defect.

4,361,172

MECHANISM FOR STOPPING A CIRCULAR LOOM DURING WEAVING OPERATION

Soichi Torii, Kyoto, Japan, assignor to Torii Winding Machine Co., Ltd., Kyoto, Japan

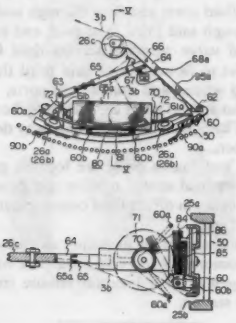
PCT No. PCT/JP79/00225, § 371 Date Apr. 25, 1980, § 102(e) Date Apr. 14, 1980, PCT Pub. No. WO80/00459, PCT Pub. Date Mar. 20, 1980

PCT Filed Aug. 24, 1979, Ser. No. 201,068

Claims priority, application Japan, Aug. 25, 1978, 53-116964; Aug. 25, 1978, 53-116965

Int. Cl.³ D03D *51/40*

U.S. Cl. 139—371 **4 Claims**



1. A mechanism for automatically stopping a weaving operation of a circular loom provided with at least one shuttle made of an electrically conductive metal and travelling along a circular passage defined by an annular guide means mounted on a frame of said circular loom and a motor for driving said circular loom, comprising:

a frame shoe secured to said shuttle;

means disposed in said shuttle for detecting an abnormal condition of a weft taken out from a yarn package formed on a bobbin held by said shuttle;

means for stopping the supply of electric power from an electric power source to said driving motor; and

means for transmitting a signal issued from said detecting means to said stopping means when said detecting means of said shuttle detects an abnormal condition of the weft, said signal transmitting means comprising a first slider mounted on said bottom surface of said frame shoe by way of an insulation member, a second slider rigidly mounted on said bottom surface of said frame shoe and spaced apart from said first slider, said first and second sliders being made of an electrically conductive material, said first slider being connected to an output of said detecting means, at least one pair of stationary electric terminal members arranged at a position adjacent to the outside of said circular travelling passage of said shuttle, said sliders extending outwardly from said bottom surface of said frame shoe in such a condition that they are capable of contacting respective ones of said electric terminal members when said shuttle travels along said circular passage, and an electric connection between said terminal members and said stopping means.

4,361,173

MACHINE FOR FORMING THE LEADS OF ELECTRONIC COMPONENTS

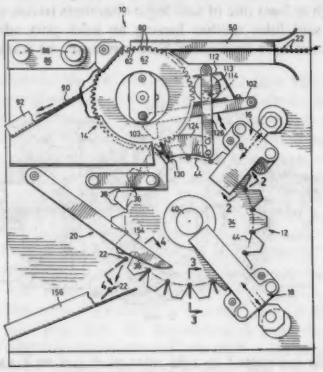
Franciscus J. A. Storimans, R.R. #4, Stouffville, Ontario, Canada

Filed Feb. 19, 1980, Ser. No. 122,417

Claims priority, application Canada, Feb. 14, 1980, 345634

Int. Cl.³ B21F *45/00*; H05K *13/02*

U.S. Cl. 140—1 **6 Claims**



1. A machine for use in the shaping of the leads of electronic components of the type having a main body portion and leads projecting therefrom, said machine comprising,

(a) a work transporter mounted for movement along a work path which extends through a lead forming station,

(b) a plurality of pockets formed in said transporter and opening outwardly therefrom at spaced intervals along the length thereof, said transporter being resiliently deformable in the area of said pockets and said pockets being proportioned to receive and apply a retaining force to the main body portion of a component located therein in use to prevent movement of the component relative to the transporter,

(c) at least one lead forming means operable in said work path for forming the leads to a predetermined configuration,

and

(d) said transporter being in the form of a resilient plastic wheel, each of said pockets being formed at the peripheral edge of the wheel and having an input passage opening radially therefrom and a lead outlet passage opening laterally therefrom at one side of the wheel.

4,361,174

WIRE WAFER FABRICATING PROCESS

Carlton G. Jenkins, Irvine, and Robert R. Johnson, Ludlow, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Sep. 18, 1980, Ser. No. 188,396

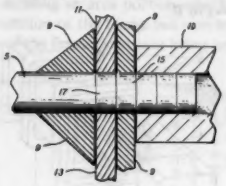
Int. Cl.³ B21F *11/00*

U.S. Cl. 140—140 **8 Claims**

1. In a process for fabricating wire wafers from wire stock wherein wire stock supporting gripper tools are positioned

adjacent a wire stop member and wire cut-off and back-up tools are positioned intermediate the wire stock supporting gripper tools the improvement comprising the steps of:

activating said wire cut-off and back-up tools to cause said cut-off tool to sever said wire stock and provide a first wire wafer intermediate said wire cut-off tool and said wire stop member and a second wire wafer intermediate said wire cut-off and back-up tools;



de-activating said wire cut-off and back-up tools to effect return of said second wire wafer into alignment with said first wire wafer;

removing said stop member;

substituting for said stop member a wire wafer magazine; and

feeding said wire wafers into said wire wafer magazine.

4,361,175

FLUID FEEDING DEVICE FOR ROTATING PLATFORMS

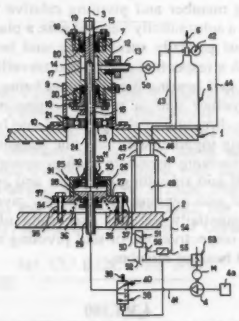
Yves L. Mongrolle, Paris, France, assignor to Societe Anonyme de Telecommunications, Paris, France

Filed Jul. 23, 1980, Ser. No. 171,296

Claims priority, application France, Jul. 25, 1979, 79 19164

Int. Cl.³ B65B *3/04*; F16L *27/08*

U.S. Cl. 141—283 **8 Claims**



1. A gaseous high-pressure fluid feeding device for feeding fluid to a rotating platform having a geometrical axis of rotation and including utilization fittings for using the fluid fed to said platform, said device comprising a high-pressure fluid source separate from the platform for feeding high-pressure fluid to the utilization fittings during a high-pressure fluid feeding operation; a rotating joint unit mounted on the platform and including fluid conduct means for fluidly interconnecting said utilization fittings and said high-pressure fluid source, a first portion of said fluid conduct means being connected to said utilization fittings and a second portion extending along said geometrical axis of rotation being connectable to said high-pressure fluid source; and connecting unit means between said second portion of said fluid conduct means and said high-pressure fluid source for establishing fluid communication therebetween, said connecting unit means having a portion thereof in communication with said fluid conduct means, another portion thereof in communication with said high-pressure fluid source, and components thereof movable from a spaced apart position to an engaged position for selectively establishing fluid communication between said high-pressure fluid source and said fluid conduct means so that fluid flows from said high pressure source to said utilization fittings, the establishment of fluid communication occurring during the high-pressure fluid feeding operation.

4,361,176

SOUP DISPENSER

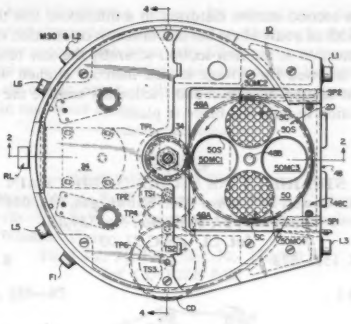
John B. West, Glyndon, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.

Continuation-in-part of Ser. No. 915,467, Jun. 14, 1978, Pat. No. 4,189,071, which is a continuation-in-part of Ser. No. 851,950, Nov. 16, 1977, Pat. No. 4,176,766, which is a continuation-in-part of Ser. No. 827,678, Aug. 25, 1977, Pat. No. 4,174,789. This application Oct. 17, 1979, Ser. No. 85,586

The portion of the term of this patent subsequent to Feb. 19, 1997, has been disclaimed.

Int. Cl.³ B67D *5/02*

U.S. Cl. 141—362 **20 Claims**



1. In a dispensing assembly for dispensing successive measured portions of liquid or semi-liquid food product from a heated reservoir at a desired serving temperature, said reservoir having a capacity of a predetermined number of serving portions and a predetermined number of served portions after which the said reservoir should be refilled to capacity to maintain said desired serving temperature without down time for thermal recovery, the invention comprising:

cyclic dispensing means connected with said reservoir for delivering a said serving portion from said reservoir for each operating cycle thereof; and

monitoring means responsive to the cyclic operation of said cyclic dispensing means for indicating the occurrence of a predetermined number of served portions dispensed from said reservoir by said cyclic dispensing means, said monitoring means including first and second detecting and indicating means for detecting and indicating, respectively, the impending occurrence and actual occurrence of said predetermined number of served portions.

4,361,177

FOLDING BOW SAW

Jack V. Miller, Sierra Madre, Calif., assignor to Acroform Corporation, Industry, Calif.

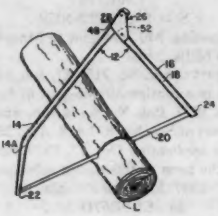
Filed Jan. 22, 1980, Ser. No. 114,213

Int. Cl.³ B27B *21/00*

U.S. Cl. 145—33 E **6 Claims**

1. In a bow saw comprising an arched structure which includes an elongated first member and an elongated second member defining a handgrip, and a saw blade mounted in tensioned relation between said bow members, the improvement comprising an over center hinge structure pivotally

coupling said first and second members for relative movement between a generally parallel, storage position and an angular operating position, said saw blade locking said members in angled relation position when tensioned therebetween wherein at least one of said members is tubular with an interior dimension sufficient to receive the saw blade and including a first section distorted to a dimension less than the width of the saw blade to define a restricted region;



and a second section distorted to a dimension less than the width of a saw blade but at a different orientation than the distortion at the first section whereby the saw blade may be inserted for storage in said member aligned with the first section distortion and frictionally engage the second section to hold the blade in place.

4,361,178

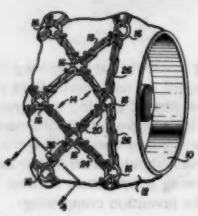
STRAIGHT LINK STUDDED TIRE CHAIN

Roger L. Gower, 21 Coburn Ave., Skowhegan, Me. 04976

Filed Jan. 27, 1981, Ser. No. 229,030

Int. Cl.³ B60C *27/00*

U.S. Cl. 152—172 **8 Claims**



1. An assembly of link elements adapted for mounting on a tire of a vehicle, said assembly comprising:

a succession of rings spaced at intervals over the tread surface of the tire;

a plurality of means comprising at least one chain link, at least two of said means being connected to each ring, at least some of said means interconnecting a pair of said rings;

said at least one chain link having a rigid, essentially flat annular body with a pair of side elements joined at opposite ends by a pair of end elements to define an oblong central opening, said central opening and said annular body being proportioned to prevent greater than 15° rotation of said at least one chain link relative to an adjacent link or ring, said at least one link being oriented, when the assembly is mounted on a tire, such that one of said side elements faces from said opening toward the tread surface of the tire and the other of said side elements faces from said opening away from the tread surface of the tire; and

at least one stud affixed to the other of said side elements such that said stud faces away from the tread surface of the tire.

4,361,179

VERTICAL BLIND

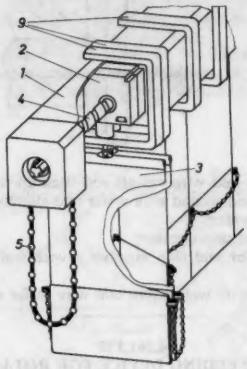
Siegfried Benthin, Bremerhaven, Fed. Rep. of Germany, assignor to SUNTEC Sonnenschutztechnik GmbH, Bremerhaven, Fed. Rep. of Germany

Filed Feb. 17, 1981, Ser. No. 235,139

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1980, 3027964

Int. Cl.³ E06B *9/26*

U.S. Cl. 160—176 R **13 Claims**



1. A vertical blind, comprising a hollow bearing member elongated in a substantially horizontal direction; a plurality of travelling carriages displacing in the interior of and relative to said bearing member in direction of elongation of the latter; a plurality of hanging members each displacing together with a respective one of said carriages in the direction of elongation of said bearing member and pivoting relative to said bearing member about a substantially vertical axis; a plurality of brackets each at least partially surrounding said bearing member, connected with a respective one of said travelling carriages in the interior of said bearing member, and being arranged so as to displace together with a respective one of said hanging members in the direction of elongation of said bearing member without pivoting together with said one hanging member; and a plurality of pivoting members each cooperating with a respective one of said travelling carriages and supporting a respective one of said hanging members for pivoting the latter about the substantially vertical axis, each of said brackets surrounding a respective one of said pivoting members in the interior of said bearing member.

4,361,180

STRETCHER FRAME FR DECORATIVE MATERIALS

Claus P. Stüvecke, Stresemannallee 90, 2000 Hamburg 54, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 887,420, Mar. 16, 1978, abandoned. This application Dec. 17, 1979, Ser. No. 104,303

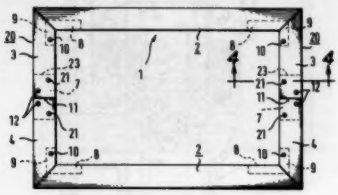
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1977, 2711618

Int. Cl.³ E06B *3/30*

U.S. Cl. 160—377 **10 Claims**

1. A stretcher frame for decorative materials serving as wall hangings, for artists' canvasses, and the like, the frame comprising two pairs of opposed limbs, the limbs of the first pair being at least as long as the limbs of the second pair, the limbs being hinged together in their end regions by first connector means for relative rotatable movement in the plane of the frame between an extended condition in which the limbs form a rectangle, and a collasped condition in which the limbs are disposed close together in substantially parallel relationship, each of the limbs of the second pair being subdivided half-way

along its length, and the limb portions so formed hinged together by second connector means so as to be foldable inwards in said plane of the frame, whereby the frame is collapsible concertina-fashion, said first and second connector means each comprising a slot formed in one of the interconnected limbs or limb portions, and a flat hinge link connected to the associated other limb or limb portion and pivotally guided in said slot, said hinge link being shaped to be completely received in its slot in the extended condition of the frame, said slot and said hinge limb further defining an area portion which is separated in the collapsed condition of the frame but overlapping in the extended condition of the frame, said area being provided with



a two component adhesive material in which each component alone is non-solid but a mixture of the two components will solidify rapidly, one of said components being provided on said hinge link, and the other of said components being provided in the associated slot, said limbs and limb portions having end faces which abut each other in the extended condition of the frame to prevent over-extending of the frame and to properly define said rectangle, and said limbs and limb portions being constituted by a plurality of superimposed interconnected sections of sheet material, the marginal contours of said sections being selected to provide the hinge links and the associated slots.

4,361,181

CASTING CORE AND PROCESS FOR THE PRODUCTION THEREOF

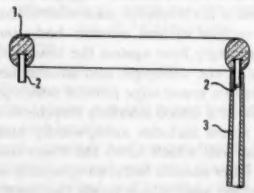
Wolfram Wischnack, Vach, and Alfred Dobner, Rosstal, both of Fed. Rep. of Germany, assignors to Alcan Aluminiumwerk Nurnberg GmbH, Frankfurt am Main, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 122,039, Feb. 19, 1980, abandoned. This application Jan. 18, 1982, Ser. No. 339,863

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1979, 2917208

Int. Cl.³ B22C *1/26, 1/02*

U.S. Cl. 164—522 **4 Claims**



1. A casting core for the creation of difficultly accessible cavities in castings of aluminum or of one of its alloys, consisting of a granular base substance and a sugar derivative as binding agent, characterized in that the granular base substance is a water-soluble salt, and the binding agent consists of burnt sugar.

4,361,182

HEAT-TRANSFERRING ELEMENTS FOR REGENERATIVE HEAT EXCHANGE

Stanislaw Michalak, Reichshof, Fed. Rep. of Germany, assignor to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 197,796

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1979, 2942126

Int. Cl.³ F28D *21/00*

U.S. Cl. 165—10 **2 Claims**

1. A heat transferring element for regenerative heat exchange, said element being embodied as a hollow body having a free inner space which is partially filled with a heat-conducting liquid as well as vapor from said liquid, said hollow body having an elastic outer shell and a reinforcing element arranged in said inner space.

4,361,183

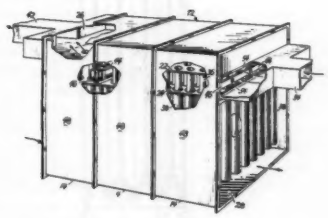
RECUPERATOR DESIGN

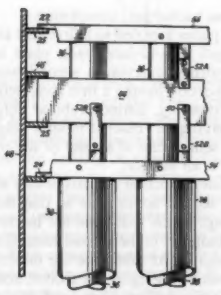
Jay T. Ware; Wayne S. Counterman, and Milton C. Brown, all of Wellsville, N.Y., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jul. 21, 1980, Ser. No. 170,380

Int. Cl.³ F28F *7/00*

U.S. Cl. 165—82 **5 Claims**





1. A concentric tube recuperative heat exchanger that comprises a plurality of laterally adjacent modules arranged to

permit serial flow therethrough of a heating fluid and a fluid to be heated, each of said modules comprising a housing that encloses parallel upper and lower tube sheets having aligned apertures therein, said tube sheets dividing each module into a lower compartment for a heating fluid, an upper compartment for a fluid that has been heated and an inlet compartment for cool fluid to be heated therebetween, outer tube means tightly embracing the apertures of the lower tube sheet having a closed end that depends downward therefrom into the compartment for the heating fluid, central tube means embracing an aperture of the upper tube sheet and extending therebetween, an inlet port in said housing adapted to admit a cool fluid to be heated to the inlet compartment and direct it down through the annular passageway and up through the central tube to the outlet compartment for the heated fluid, means admitting a heating fluid to the heat exchange compartment and directing it over the outer tube means in heat exchange relation with the fluid to be heated, and an elongate support beam extending laterally between housing walls intermediate said tube sheets adapted to support the tube sheets and the tube means depending therefrom.

4,361,184

PLATE HEAT EXCHANGER

Folke Bengtsson, Stockholm, Sweden, assignor to Cark Johan Lockmans Ingenjorsbyra AB, Stockholm, Sweden

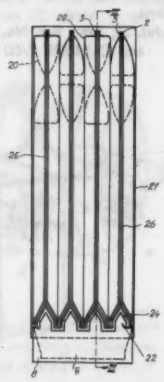
PCT No. PCT/SE79/00114, § 371 Date Jan. 22, 1980, § 102(e) Date Dec. 27, 1979, PCT Pub. No. WO79/01097, PCT Pub. Date Dec. 13, 1979

PCT Filed May 22, 1979, Ser. No. 189,927

Claims priority, application Sweden, May 22, 1978, 7805830

Int. Cl.³ F28F *3/12*

U.S. Cl. 165—165 **2 Claims**



1. A plate heat exchanger, comprising:

a plurality of plates exposed to a first heat exchange medium and arranged face-to-face, each plate including a heat exchange portion carrying a second heat exchange medium, said portion having a first zone defining "2n" longitudinally extending, distinct, tubular bulgings, and a second zone having "n" distinct tubular bulgings disposed in concentric semicircles at an end of the plate,

whereby "n" is an integer,

said heat exchange portion consists of first and second zones,

said first and second zones mate so that the the two outermost bulgings in the first zone are interconnected by the outermost bulgings in the second zone, the next two outermost bulgings in the first zone are interconnected by the next outermost bulging in the second zone, seriatim,

said bulgings being connected in pairs, being curvilinear and asymmetric in cross-section, and adjacent ones are reversed relative to each other, and

heat exchange is effected between said first and second media when said second medium is caused to flow through said bulgings in said plates.

4,361,185

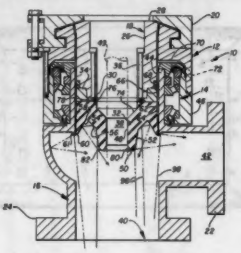
STRIPPER RUBBER FOR ROTATING BLOWOUT PREVENTORS

John M. Biffle, Rte. 3, Box 445D, Midland, Tex. 79701

Filed Oct. 31, 1980, Ser. No. 202,686

Int. Cl.³ E21B *33/03*

U.S. Cl. 166—84 **8 Claims**



1. A rotating blowout preventor having a main body; a lateral outlet leading from said main body, means for attaching said main body to the upper end of a wellbore casing; an axial passageway formed through said main body through which a rotating member can be telescopingly received;

an upwardly extending washpipe affixed to and forming part of said main body; a rotating head assembly rotatably mounted at the upper end of said main body, said rotating head assembly includes a stripper rubber assembly affixed to said rotating head assembly and positioned within said axial passageway; said stripper rubber assembly includes a stripper mount member and a stripper rubber for sealingly engaging the washpipe; an axial passageway formed through said stripper rubber assembly;

said stripper rubber has an upper end attached to said mount member and a lower end extending downwardly therefrom for sealingly engaging a rotating member which may extend axially therethrough;

said stripper rubber having a large annular upper end attached to said mount member, and spaced, concentrically arranged, lower annular marginal ends;

said lower annular marginal ends are comprised of an inner annular body and an outer annular body separated from one another by a downwardly opening annular recess;

said inner annular body has an axial passageway formed therethrough for sealingly engaging a rotating member;

said outer annular body has an outer circumferentially extending surface which slidably engages the lower inside marginal end of the washpipe; said outer circumferentially extending surface of said annular body outwardly diverges to sealingly bear against the lower marginal interior surface of the washpipe, said annular body and said washpipe have a lower edge portion which jointly terminate to provide a sealed interface therebetween;

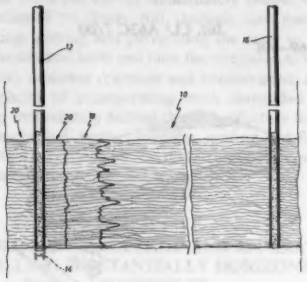
said annular recess includes an upwardly and outwardly inclined first wall which forms the lower outer marginal end of said inner annular body, an upwardly and inwardly inclined second wall which forms the lower inner marginal end of said outer annular body, and a sloped third wall which lies at an obtuse angle respective to said first wall and at an acute angle respective to said third wall so that debris which intersects either of said first, second, and third wall surfaces are deflected in such a manner to minimize the entrace thereof into the annulus formed between the stripper rubber assembly and the washpipe.

4,361,186

FORMATION FLOW CHANNEL BLOCKING

Alexander I. Kalina, 12439 Millbanks, Houston, Tex. 77031

Filed Nov. 6, 1980, Ser. No. 204,626
Int. Cl.³ E21B *33/138, 43/22*
U.S. Cl. 166—295 **23 Claims**



1. A method of blocking high permeability flow channels in a hydrocarbon material bearing formation having flow channels of high permeability and flow channels of lesser permeability extending along the formation, which comprises:

(a) introducing a blocking material fluid comprising a blocking material and a carrier fluid, into the flow channels through an injection well in communication with the formation;

(b) introducing a buffer fluid into the formation through the injection well for the buffer fluid to displace the blocking material fluid away from the injection well;

(c) allowing the blocking material to separate from the carrier fluid to deposit in the channels to resist displacement by fluid flowing through the channels;

(d) introducing a quantity of an activating fluid into the flow channels through the injection well to displace the buffer fluid and thus the carrier fluid along the channels, the quantity and rate of introduction of the activating fluid being controlled for the activating fluid to finger into the high permeability channels and reach the deposited blocking material in those channels without reaching the blocking material in the lesser permeable channels, the activating fluid being adapted to activate the blocking material which it reaches in the high permeability channels to cause blocking of those channels.

4,361,187

DOWNHOLE MIXING VALVE

Thomas J. Luers, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Feb. 21, 1980, Ser. No. 123,152
Int. Cl.³ E21B *34/00*
U.S. Cl. 166—326 **16 Claims**

1. A downhole valve, comprising:

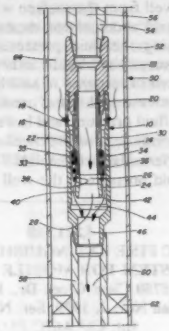
tubular housing means;

imperforate tubular mandrel means having a free end opening into said housing;

imperforate crossover body means having a cylindrical bore therethrough coaxial with and opening into the bore of said mandrel means, said housing means and said mandrel means defining an annulus therebetween and being coaxially affixed at one end to said crossover body means;

port means through the wall of said housing means adjacent the crossover means;

pressure responsive seal means in said annulus and being substantially axially spaced from said port means, said pressure responsive seal means attached to one of said housing and mandrel means and being located between said port means and the ree end of said mandrel means, said seal means allowing flow through said annulus past



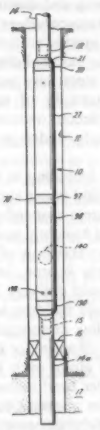
said seal means and preventing flow in the opposite direction.

4,361,188

WELL APPARATUS ACTUATING MEANS HAVING PRESSURE ACCUMULATOR MEANS AND METHOD OF USE

Larry R. Russell, 6025 Edgemoor, Suite C, Houston, Tex. 77081

Filed Apr. 7, 1980, Ser. No. 137,714
Int. Cl.³ E21B *34/10, 43/12*
U.S. Cl. 166—381 **42 Claims**



1. Well apparatus, comprising tubular body means having connection means at its upper and lower ends whereby said apparatus may be lowered into a well connected in a pipe string, pressure accumulator means associated with said tubular body means for holding a separate fluid therein under pressure, control valve means for admitting pressuring fluid to pressure said separate fluid within said accumulator from the exterior surface of said apparatus, means for preventing movement of said control valve means to open to prevent outflow of said pressuring fluid, actuator means exposed to the pressure of said separate fluid within said accumulator at a first surface and exposed to the pressure of fluid at the exterior of said apparatus at a second surface whereby said actuator means may be operated in response to pressure differentials between said pressures at said first and second surfaces, and movable means adapted to be operated by operation of said actuator means.

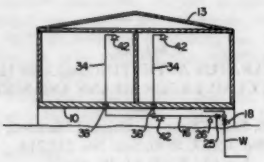
32. Method for providing operation of apparatus downhole in a well, comprising running a pressure accumulator of variable internal volume containing a separate fluid at an initial pressure into a well from the surface with at least a portion of the exterior of said accumulator exposed to fluid pressure in the well increasing the fluid pressure in the well to above hydrostatic pressure, whereby the internal volume of the accumulator is reduced in response to said increased fluid pressure in the well to increase said initial pressure in the accumulator to a higher final fluid pressure, and lowering said fluid pressure in the well to operate apparatus downhole in the well by application of the differential between said higher final fluid pressure and said fluid pressure in the well across a piston.

4,361,189

AUTOMATIC FIRE EXTINGUISHING AND ALARM SYSTEM FOR MOBILE HOMES

Lyle G. Adams, 5750 Clear Creek Dr., Denver, Colo. 80212

Filed Nov. 2, 1979, Ser. No. 90,658
Int. Cl.³ A62C *35/12*
U.S. Cl. 169—14 **12 Claims**



1. A fire extinguishing and alarm system adapted for installation in a building structure wherein the building has a raised floor spaced above a ground surface, outer enclosing walls and interior walls dividing said building into a plurality of rooms, an outside source of electricity including an electrical service panel positioned externally of said building, a gas supply source including a solenoid operated gas shut-off valve, and a source of water supply under pressure, said fire protection system comprising:

a sprinkler system including at least one inlet delivery line extending from said water supply source including check valve means therein suspended beneath said raised floor externally of said building, said check valve means operative to prevent reverse flow of liquid from said system into said water supply source, at least one riser extending upwardly from said delivery line through said floor into the interior of said building structure, a horizontally extending supply line connected to the upper end of said riser, a plurality of sprinkler heads connected in series at spaced intervals along each said horizontal supply line, each said sprinkler head including valve means operative to be activated in response to a predetermined temperature level to discharge water under pressure therefrom independently of the other of said valve means;

alarm circuit means disposed externally of said building and operative to be electrically activated to sound an alarm; and

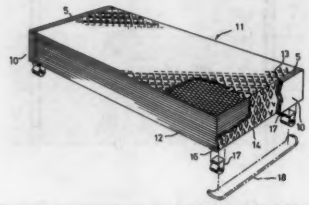
electrical control circuit means electrically connected between said electrical power source, said gas shut-off valve and said alarm circuit means, said control circuit means including sensing means responsive to activation of at least one of said sprinkler heads to interrupt the electrical service from said electrical service panel to said building structure, to interrupt the gas supply to the building structure by closing the solenoid operated gas shut-off valve and simultaneously activating said alarm circuit, said sensing means defined by a water flow switch in said delivery line externally of said building which is operative in response to opening of at least one of said sprinkler heads to activate said control circuit means.

4,361,190

METHOD AND APPARATUS FOR PROVIDING A TRAVERSABLE PATHWAY THROUGH A POOL OF FLAMMABLE FLUID

Andrew Szego, Willowdale, Canada, assignor to Vulcan Industrial Packaging Limited, Rexdale, Canada

Filed Sep. 5, 1980, Ser. No. 184,283
Claims priority, application United Kingdom, Sep. 7, 1979, 7931025
Int. Cl.³ A62C *7/00*
U.S. Cl. 169—48 **23 Claims**



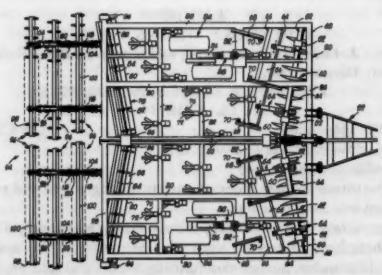
1. Apparatus for forming a traversable pathway through a pool of flammable fluid, comprising a plurality of platform elements each comprising a blanket of porous, non-capillary, heat-resistant material of thickness sufficient to prevent penetration of flame from the upper surface of the blanket to the flammable fluid when in contact with the lower surface of the blanket, the blanket material providing a myriad of small internal interstices and being relatively readily compressible or deformable, and each element having on its upper surface a relatively rigid load-distributing porous deck connected to downwardly depending members which support the deck whereby the elements are adapted to support the weight of one or more persons thereon without substantial deformation and said elements being adapted to be deployed in contiguous end-to-end relationship to form a substantially continuous elongated pathway.

4,361,191

SEEDBED PREPARATION IMPLEMENT

Donald R. Landoll, and David J. Kongs, both of Marysville, Kans., assignors to Landoll Corporation, Marysville, Kans.

Filed Feb. 27, 1981, Ser. No. 238,765
Int. Cl.³ A01B *35/18*
U.S. Cl. 172—146 **30 Claims**



1. In a secondary, one trip, minimum tillage, seedbed preparation machine for use during the seeding season,

a carrier;

a plurality of soil penetrating, incorporating slicer disks suspended from the carrier for breaking crusts, reducing crop residue, roots, clods and compaction, and for leveling ridges and other ground surface irregularities;

shielding suspended from the carrier immediately behind the disks for controlling the flow of materials brought up by the disks and leveling the same;

a number of rows of spaced, field cultivator, incorporating blades suspended from the carrier immediately behind the shielding for further reducing compaction and for loosening and aerating the materials sliced by said disks;

rotatable, soil agitating, incorporating reel structure suspended from the carrier immediately behind the blades and adapted to freely roll through said materials for churning, stirring and pulverizing the same to lower the fines to seedbed level and raise the roughage to the top for effecting moisture retention and conservation; and

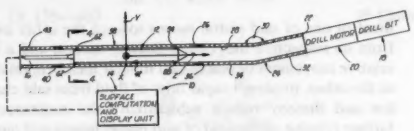
a multiplicity of incorporating teeth suspended from the carrier immediately behind the reel structure for harrowing, smoothing, further leveling, settling and firming the materials pulverized by the reel structure to complete the dressing of the seedbed.

4,361,192

BOREHOLE SURVEY METHOD AND APPARATUS FOR DRILLING SUBSTANTIALLY HORIZONTAL BOREHOLES

Larry S. Trowsdale, Oklahoma City, Okla., assignor to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Feb. 8, 1980, Ser. No. 119,745
Int. Cl.³ E21B *7/00*
U.S. Cl. 175—45 **32 Claims**



1. An apparatus adapted for drilling substantially horizontal boreholes through an earth formation, comprising:

a drill bit;

a drill motor operatively connected to the drill bit for driving the drill bit to form the borehole through the earth formation;

a probe housing, the drill motor and the drill bit being connected to one end of the probe housing;

a probe supported within the probe housing and disposed near the drill bit;

means for measuring the components of the earth's magnetic field along a preselected "x" axis extending perpendicularly to the axial centerline of the probe and along a "z" axis extending along the axial centerline of the probe and providing an output indication of the azimuth of the borehole from the "z" component of the earth's magnetic field and the "x" component of the earth's magnetic field when the "x" axis is disposed in a horizontal plane, comprising:

a fluxgate supported in the probe for measuring the component of the earth's magnetic field strength along the "x" axis and providing a first output signal proportional to the measured component of the earth's magnetic field strength generally along the "x" axis, and for measuring a component of the earth's magnetic field strength generally along the "z" axis and providing a second output signal proportional to the measured component of the earth's magnetic field strength generally along the "z" axis;

an angle converter receiving the first and second output signals provided by the fluxgate and providing an output signal proportional to an angle whose tangent is the quotient of the first and second output signals provided by the fluxgate, the angle converter output signal being proportional to the azimuth of the probe housing; and

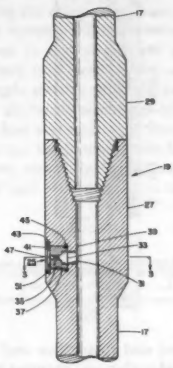
means for receiving the output signal provided by the angle converter and providing an output indication of the azimuth of the probe housing.

4,361,193

METHOD AND ARRANGEMENT FOR IMPROVING CUTTINGS REMOVAL AND REDUCING DIFFERENTIAL PRESSURE STICKING OF DRILL STRINGS IN WELLBORES

Wilton Gravley, Carrollton, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 28, 1980, Ser. No. 210,911
Int. Cl.³ E21B *7/04, 17/00, 21/10*
U.S. Cl. 175—61 **14 Claims**



1. A method of rotary drilling a deviated wellbore into the earth's crust to mitigate differential sticking of a drill string, formed of a plurality of sections of drill pipe interconnected at tool joints and having a drill bit at the lower end thereof, and to improve the removal of cuttings settled in the lower portion of the annulus formed about the drill string in said deviated wellbore, comprising:

a. circulating a drilling fluid down the drill string and returning said fluid from the wellbore in a return stream in the annulus formed about the drill string;

b. sweeping the drill cuttings accumulated on the lower side of the deviated wellbore into the main return stream of the drilling fluid flow by projecting at least a portion of said drilling fluid substantially radially outwardly as fluid jets from at least one of the tool joints of said drill string into said wellbore annulus from the interior of said drill string so as to impart stirring movement to cuttings settled on the low side of said wellbore and facilitate removal thereof by the upwardly flowing fluid in said annulus.

4,361,194

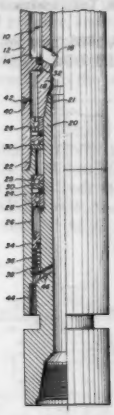
BEARING SYSTEM FOR A DOWNHOLE MOTOR

Jacob Chow, Salt Lake City, and John S. Davis, Sandy, both of Utah, assignors to Christensen, Inc., Salt Lake City, Utah

Filed Sep. 30, 1980, Ser. No. 192,280
Int. Cl.³ E21B *4/02*
U.S. Cl. 175—107 **28 Claims**

1. A bearing means for the driven shaft of a rotating tool in an oil well or the like, the driven shaft being hollow to convey drilling fluid flowing down the drill string to a drill bit, there being a motor adapted to rotate the driven shaft and wherein the drilling fluid is forced down the drill string under pressure to flow through and then out of the drill bit to clear debris from around the tool and flush the debris out of the well, comprising relatively stationary tubular means supported from the lower end of the drill string having an interior wall forming a chamber, said driven shaft extending downwardly through said chamber and having its outer wall spaced from the interior

wall of said tubular means, said shaft supporting said drill bit on its lower end and being rotatably supported within said chamber with the drill bit extending beyond the lower end of said tubular means, main bearing means within said chamber for rotatably supporting said driven shaft, rotary face seal means enclosing a space within said chamber, said seal means being disposed above and below said main bearing means, said main bearing means including radial bearing means disposed



immediately adjacent said rotary face seal means within said chamber, oil confined within said chamber between said rotary seals for lubricating said bearing means, means to pressurize the oil confined within said chamber, and means for directing the drilling fluid flowing in said hollow shaft in a manner to produce a balanced drilling fluid pressure above and below said rotary face seal means, and a restricted outlet passage to exhaust the directed drilling fluid from between said hollow driven shaft and said tubular means and into the well.

4,361,195

DOUBLE ACTING HYDRAULIC MECHANISM

Robert W. Evans, 7126 Brookstone, Houston, Tex. 77040

Filed Dec. 8, 1980, Ser. No. 214,454

Int. Cl.³ E21B *4/14*

U.S. Cl. 175—297 **35 Claims**

1. A fluid actuating mechanism comprising:

inner and outer tubular members positioned in telescoping relation for limited longitudinal movement of one relative to the other,

first and second piston means positioned between said inner and outer tubular members in longitudinally spaced relation for movement longitudinally therebetween,

said longitudinally spaced piston means cooperating with said tubular members to define an annular chamber therein,

each of said piston means being movable relative to each of said inner and outer tubular members,

means limiting the movement of said first piston means in one direction,

means limiting the movement of said second piston means in the opposite direction,

said movement limiting means defining a predetermined initial longitudinal spacing of said first and said second piston means,

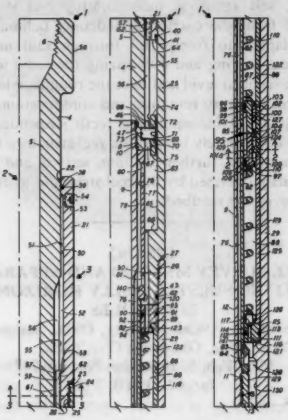
said chamber being adapted to be filled with a fluid resisting relative movement of said piston means,

means for moving said first piston means away from said movement limiting means toward said second piston means in response to relative movement between said tubular members in one direction,

means for moving said second piston means away from said movement limiting means toward said first piston means in response to relative movement between said tubular members in the opposite direction,

means permitting relative movement between said piston means when said chamber is filled with fluid, and

means effective upon a first predetermined relative move-



ment of one of said piston means toward the other away from its respective movement limiting means, and a like relative movement of one of said tubular members relative to the other, to permit rapid flow of fluid from said chamber and thereby reduce substantially the resistance to further relative movement of said piston means and movement of said tubular members therewith.

4,361,196

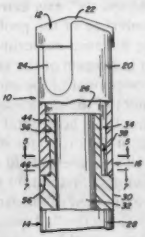
ROOF BIT COUPLING

Gettys D. Hoyle, Jr., Matthews, N.C., assignor to Carmet Company, Pittsburgh, Pa.

Filed Jul. 11, 1980, Ser. No. 167,625

Int. Cl.³ E21B *17/00*

U.S. Cl. 175—320 **7 Claims**



1. In a mine roof drilling system of the type having a drive member and a bit member, a high torque coupling for releasably interconnecting said members for rotation about a common axis, said coupling including:

a plug on one of said members projecting axially from an end thereof and having an outermost axial-locking segment and a discrete torque-transmitting segment;

a socket in one end of the other said members adapted to releasably receive said plug with said members axially aligned; and

a radial constriction in said socket, said constriction having an acircular transverse cross-section;

said axial-locking segment having a transverse cross-section complemental to said acircular cross-section of the constriction to permit the axial-locking segment to pass through the restriction when the cross-sections are aligned for insertion or withdrawal of the plug from the socket;

said torque-transmitting segment having an acircular transverse cross-section dissimilar to the cross-section of said restriction and cooperable therewith to permit limit relative rotation of said members with respect to one another between right- and left-hand torque-transmitting positions when the plug is received within the socket;

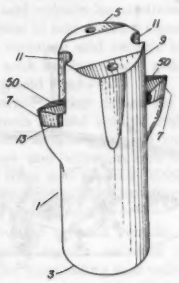
said axial-locking segment being angularly positioned about the axis of said one member relative to said torque-transmitting member such that the locking-segment is angularly misaligned with said restriction when the members are in one of said torque-transmitting positions whereby to preclude withdrawal of the plug from the socket by solely axial movement.

4,361,197

BLAST HOLE GROOVING BIT AND WEAR RESISTANT COMPACT

Clyde H. Hutzell, Schellsburg, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed Sep. 24, 1980, Ser. No. 190,194
Int. Cl.³ E21B *10/40*
U.S. Cl. 175—407 **19 Claims**



1. A blast hole drill bit which comprises an elongate body with opposing ends with one end adapted to be attached and driven by a drill and the other end having a face that extends foremost into the hole, a pilot diameter extending rearwardly from said face, and a grooving wing extending radially outwardly from said pilot diameter, said grooving wing comprising a recess formed longitudinally from said forward face rearwardly in said body and ending in a seat that is transverse to the longitudinal axis of said body, and a wear compact mounted on said seat and in said recess and extending radially outwardly from said pilot diameter.

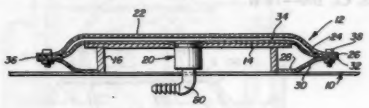
4,361,198

SCALE PAD AND VALVE STRUCTURE

Fred E. Sjogren, Coos Bay, Oreg., assignor to Glenda J. Sjogren; Alan L. Sjogren, both of Coos Bay and Kenneth A. Sjogren, Coquille, all of, Oreg., part interest to each

Filed Nov. 21, 1980, Ser. No. 209,312
Int. Cl.³ G01G *19/10*
U.S. Cl. 177—141 **4 Claims**

1. A scale pad for log bunk, said pad including a horizontal table having a central portion and an outer peripheral portion, an upper top plate centered over said table and including an outer peripheral portion, a diaphragm between said top plate and table and secured across and to the outer peripheral portions of said top plate, the central portion of said table and the overlying portion of said diaphragm having registered central openings formed therein, said top plate and table including coacting means guiding said top plate from said table for vertical movement relative thereto, limited horizontal shifting relative thereto and limited canting relative thereto in all directions about a central zone of said table, an elongated pop-off valve assembly sealingly secured through said central portion of said table and the overlying portion of said diaphragm, said pop-off valve assembly including an elongated upstanding sleeve having air inlet means at its lower end and an open upper end provided with a radially outwardly projecting and downwardly facing peripheral abutment flange, said sleeve being passed through said registered openings and said abutment flange overlying the marginal portions of said diaphragm defining the central opening therein, a tubular piston plunger reciprocally received in said sleeve and including a piston thereon between said inlet means, the upper end of said plunger being sealingly slidable through the upper sleeve end, a vent port in said sleeve between said inlet means and said upper sleeve end below said table, said vent port being spaced above said piston when the latter is in its lower limit position and said piston being upwardly displaceable in said sleeve at least to the level of said vent port upon upwardward move-



ment of said piston in said sleeve, said sleeve including a diametrically enlarged externally threaded portion below said vent port, the lower end of said sleeve being open and defining the air inlet means at the lower end of said sleeve, an internally threaded closure nut threadedly engaged on said externally threaded portion and extending below said sleeve, the lower end of said nut including an end wall underlying the lower end of said sleeve and having a fluid pressure inlet port formed therein, the upper end portion of said nut defining an annular channel extending thereabout externally of the upper end portion of said sleeve below said table in which said vent port is formed and into which said vent port opens, the upper end of said nut being tightened against a downwardly facing abutment surface portion of said table extending about the central opening therein through which said sleeve is received, the upper end of said nut including a generally radial port opening into said channel, the portions of said diaphragm and table disposed about said openings being clampingly engaged between said abutment flange and the upper end of said nut and the threaded engagement of said nut with said sleeve as well as the abutting engagement of the upper end of said nut with the undersurface of said table serving to reinforce said pop-off valve assembly against breakage as a result of lateral forces being directed thereon below said horizontal table.

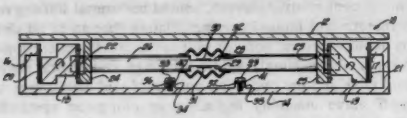
4,361,199

OVERLOAD PROTECTION FOR A WEIGH SCALE HAVING A FLEXURE BEAM

Thomas A. Ulicny, Ferndale, Mich., assignor to GSE, Inc., Farmington Hills, Mich.

Filed Jul. 1, 1980, Ser. No. 164,978
Int. Cl.³ G01G *23/02, 3/14*
U.S. Cl. 177—154 **12 Claims**

1. A weigh scale comprising a base, a platform, a pair of pivot members, a single beam connected between the pivot members and having a central portion of reduced cross sectional area with a group of strain gauges mounted thereon, load transmitting means for deflecting the beam about the pivot members as a function of a load placed on the platform to create strain in the central portion thereof which is sensed by

said strain gauges, and overload protection means directly adjacent opposite sides of the central portion of the beam

between said pivot members for limiting the amount of deflection of the central portion of the beam to prevent yielding thereof upon experiencing excessive loads.

4,361,200

ENGINE CONTROL SYSTEM FOR A COMBINATION CAR SYSTEM

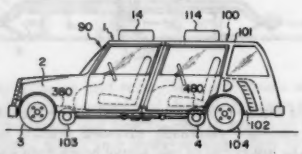
Isao Igarashi, Okazaki, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 17, 1980, Ser. No. 207,436

Claims priority, application Japan, Nov. 16, 1979, 54-158751[U]

Int. Cl.³ B60D *7/00*; B60K *26/00*; B62D *63/00*

U.S. Cl. 180—14 R **7 Claims**



1. In a combination car system, comprising:

(a) a first car, capable of running independently, comprising a first pair of front wheels by which said first car is driven, a first pair of rear wheels, a first engine, and a first engine output control element, displacement of which controls the engine output of said first engine; and

(b) a second car, capable of running independently, comprising a second pair of front wheels, a second pair of rear wheels by which said second car is driven, a second engine, and a second output control element, displacement of which controls the engine output of said second engine;

(c) said first car and said second car being couplable together into a coupled car which runs on said first pair of front wheels of said first car and said second pair of rear wheels of said second car, with said first pair of rear wheels of said first car and said second pair of front wheels of said second car being removed from road contact:

an engine control system, comprising:

(d) a first accelerator pedal attached to said first car;

(e) a first displacement transmission mechanism, which transmits displacement of said first accelerator pedal to said first engine output control element;

(f) a second accelerator pedal attached to said second car;

(g) a second displacement transmission mechanism, which, when said second car is running independently, transmits displacement of said second accelerator pedal to said second engine output control element, comprising:

(g1) a connection unit;

(g2) a first displacement transmission submechanism, which is, when said second car is running independently, removably drivingly coupled to said connection unit, and which at this time transmits displacement of said second accelerator pedal to said connection unit; and

(g3) a second displacement transmission submechanism, which transmits displacement of said connection unit to said second engine output control element;

(h) and a third displacement transmission mechanism which, when said first car and said second car are coupled together into said coupled car, extends from a part of said first displacement transmission mechanism to be removably drivingly coupled to said connection unit, said first displacement transmission submechanism being at this time uncoupled from said connection unit;

(i) whereby, when said first car and said second car are coupled together into said coupled car, the operation of said first engine of said first car and the operation of said second engine of said second car are coupled together and are controlled from said first car by displacement of said first accelerator pedal, the controlling operation of said second accelerator pedal being at this time disenabled.

4,361,201

SAFETY DEVICE FOR SELF-PROPELLED MACHINES

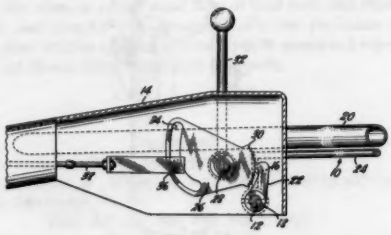
Lennart Hallstedt, Lyckeby, and Bengt Soderberg, Tving, both of Sweden, assignors to Dynapac Maskin Aktiebolag, Solna, Sweden

Filed Oct. 16, 1980, Ser. No. 197,602

Claims priority, application Sweden, Oct. 22, 1979, 7908733

Int. Cl.³ B62D *51/04*

U.S. Cl. 180—19 H **10 Claims**



5. A safety device for a self-propelled machine with a steering rod guided by an operator's handle comprising:

a safety handle positioned proximately below said operator's handle and parallel to at least a portion of said operator's handle for grasping by the operator, said safety handle having first and second arms projecting downwardly from said safety handle;

a member rotatably mounted in said steering rod below said safety handle, said first and second arms of said safety handle rigidly attached to opposite ends of said shaft;

an operating disc with teeth for controlling the motion of said machine, and rotatably mounted in said steering rod;

means normally biasing said operating disc to maintain said machine in a stationary position;

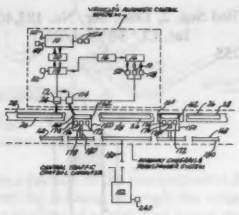
a locking arm rigidly connected with said member and engaging said teeth in said operating disc for securing said operating disc in a fixed position whereby the motion of said machine is constant, said locking arm being connected with said member in a position, relative to the safety handle and a pivotal axis of the safety handle and locking arm, that distributes the mass of the elements pivotal with said safety handle such that the torque produced by gravitational forces acting upon said safety handle is practically zero when said safety handle is pivoted into its position of closest proximity with said operator's handle.

4,361,202

AUTOMATED ROAD TRANSPORTATION SYSTEM

Michael Minovitch, 2832 St. George St., Los Angeles, Calif.

Filed Jun. 15, 1979, Ser. No. 48,715
Int. Cl.³ B60K 31/00
U.S. Cl. 180—168 49 Claims



1. An automatic guidance system for passenger carrying road vehicles comprising:

a roadway;

a passive metallic guiderail embedded longitudinally along said roadway;

a vehicle on the roadway;

means on the vehicle for transmitting a signal from the vehicle toward the guiderail;

sensor means mounted on said vehicle responsive to a return signal from said guiderail for emitting a steering signal in response to the return signal;

control means in said vehicle for continuously steering said vehicle in response to said steering signal from said sensor means so as to maintain said vehicle in a predetermined lateral position with respect to said guiderail as said vehicle moves along said roadway;

a plurality of control marker means for conveying coded information signals to said vehicle embedded along said roadway adjacent to said guiderail and spaced apart at various positions and wherein said coded information signals emitted from said roadway control marker means include roadway identification, position and a prescribed primary vehicle speed profile;

sensor means mounted on said vehicle responsive to said coded information signals received from said control marker means for controlling said vehicle;

decoding circuitry means on said vehicle for decoding said coded information signals received from said control marker means;

means for conveying said control information to a microprocessor on the vehicle;

clock means connected electronically to said vehicle microprocessor;

speed sensor means in said vehicle for determining said vehicle's actual speed profile;

odometer sensing means connected electronically to said microprocessor whereby the distance traveled by said vehicle between two points or between two clock times can be determined; and

speed control means in said vehicle connected to the speed sensor means for adjusting said vehicle's actual speed to match said vehicle's prescribed speed profile received from said control marker means.

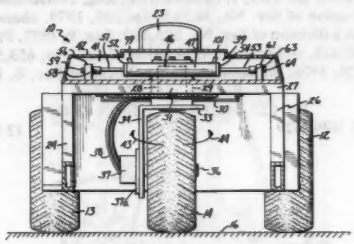
4,361,203

POWER STEERING SYSTEM FOR MOTOR VEHICLE

Floyd E. Buschbom, Long Lake, Minn., assignor to Veda, Inc., Long Lake, Minn.

Filed Jul. 3, 1980, Ser. No. 165,745
Int. Cl.³ B62D 5/06
U.S. Cl. 180—213 31 Claims

1. A vehicle comprising: a frame, a pair of drive wheel means and a steerable wheel operatively associated with the frame and engageable with the ground, first means rotatably mounting said steerable wheel on the frame for movement about a generally upright axis to steer said vehicle, said first means including an upright spindle and means rotatably mounting the spindle on the frame for rotation about a generally upright axis, second means connected to said spindle for rotating said spindle about said upright axis, said second means including linearly movable cylinder means having a chamber, piston means located in the chamber, stationary rod means connected to the piston means to locate the piston means in longitudinal alignment with said upright axis, said rod means having opposite ends, first mount means for supporting one end of the rod means on the frame, second mount means for supporting the other end of the rod means on the frame, first adjustable means connecting the one end of the rod means to the first mount means, second adjustable means connecting the other end of the rod means to the second mount means, said first and second adjustable means holding the rod means in tension along the length thereof, said cylinder means being movable relative to the piston means and rod means, power



transmitting means connecting the cylinder means with the spindle whereby on linear movement of the cylinder means relative to the rod means and piston means, the spindle is rotated about the generally upright axis to turn said steerable wheel about said upright axis to steer the vehicle, said power transmitting means including first and second elongated flexible members, said first flexible member being connected to one end of the cylinder means and the spindle, said second flexible member being connected to the other end of the cylinder means and the spindle, means to selectively supply and drain fluid under pressure to and from opposite ends of said cylinder means to move said cylinder means in selected opposite linear directions relative to the rod means and piston means, fluid operated motor means mounted on the first means operatively associated with the steerable wheel to rotate the steerable wheel, line means connected to the fluid operated motor means for carrying fluid under pressure to and from the motor means, said line means having a coiled section located around the spindle, and means for holding the coiled section above said steerable wheel and around said spindle.

4,361,204

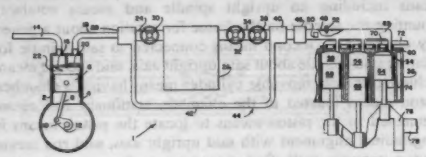
HOT GAS VEHICULAR POWER SYSTEM WITH REGENERATION

John L. Earle, 2905 Crane St., Lemon Grove, Calif. 92045

Filed Feb. 11, 1980, Ser. No. 120,031
Int. Cl.³ B60K 3/02
U.S. Cl. 180—302 13 Claims

1. Hot gas engine apparatus comprising a compressor, a storage tank connected to the compressor for storing compressed gas from the compressor, a motor connected to the storage tank for receiving compressed gas from the compressor and operating the motor and heater means connected between the storage tank and the motor for heating compressed gas before the gas flows to the motor, wherein the heater means comprises a first heat exchanger between the compressor and the storage tank for receiving heat from compressed gas before it enters the storage tank and second heat exchanger

connected between the storage tank and motor for releasing heat to gas as it passes from the storage tank to the motor and



heat communication means connected to the first and second heat exchanger for communicating heat from the first heat exchanger to the second heat exchanger.

4,361,205

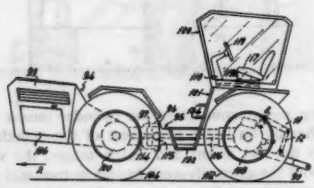
ARTICULATED TRACTOR WITH CABIN HOUSING OPERATOR'S SEAT AND CONTROLS ABOVE REAR WHEELS OVERLOOKING ATTACHED IMPLEMENTS

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Continuation of Ser. No. 34,563, Apr. 30, 1979, abandoned, which is a division of Ser. No. 805,180, Jun. 9, 1977, Pat. No. 4,155,415, which is a continuation of Ser. No. 653,513, Jan. 29, 1976, abandoned. This application Dec. 8, 1980, Ser. No. 213,878

Int. Cl.³ B62D *33/006*; B60N *1/002*

U.S. Cl. 180—329 **12 Claims**



1. A tractor which comprises:

means for driving the tractor comprising only one engine;

front and rear sets of ground wheels having respectively front and rear axes of rotation, all of said ground wheels driven by said engine;

a frame which comprises a front portion and a rear portion, said portions being pivotable relative to each other about a substantially vertical axis located between said front and rear horizontal axes of said ground wheels, said engine being mounted on said front portion of said frame;

an operator's seat and operating controls including steering controls from which the tractor is steerable and controllable, a console proximate said operator's seat, at least part of said steering and operating controls being mounted on said console;

a cabin mounted on said rear portion of said frame as seen in side view above said rear set of said ground wheels whereby said cabin extends both forward and to the rear of said rear axis of rotation as seen in plan, said console together with said operator's seat and said controls being mounted on said rear portion of said frame and being turnable through substantially 180° about a substantially vertical axis of a pivot disposed under said seat within said cabin which is not so turnable, and means being provided to retain said console including said operator's seat and controls in a position selected from one in which an operator occupying said seat faces generally forward and one in which such operator faces generally rearward of the tractor, said seat being at least in part directly vertically above the front half of said rear ground wheels as seen from the side in both said selected positions;

a lifting device extending rearwardly from said rear portion of said frame near said cabin whereby an operator in said seat has a direct view of an implement attached to said lifting device.

4,361,206

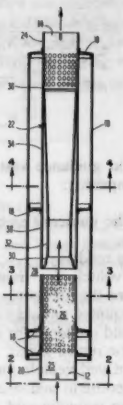
EXHAUST MUFFLER INCLUDING VENTURI TUBE

Shyan S. Tsai, Longview, Tex., assignor to Stemco, Inc., Longview, Tex.

Filed Sep. 2, 1980, Ser. No. 183,404

Int. Cl.³ F01N *1/08*

U.S. Cl. 181—255 **7 Claims**



1. A muffler for an internal combustion engine comprising:

a housing defining an inlet end and an outlet end;

an inlet tube passing through the inlet end of the housing;

a venturi section disposed within said housing and axially spaced from said inlet tube, defining a passage for gases substantially smaller in cross-section than said housing and aligned generally axially with respect to said outlet end, comprising:

a reducing bell forming the inlet of said venturi section communicating with said inlet tube for reducing the effective cross-sectional area of said passage to at most about half its original size;

a straight section of tube of invariant cross-section coupled to the outlet end of said reducing bell;

a gradual diffusing tube connected to the outlet end of said straight section and increasing the effective diameter of said passage to substantially the original inlet diameter of said reducing bell;

a perforate section of tube axially connecting said diffusing tube with the outlet defined by said housing, wherein substantially all said gases pass through said venturi section; and

a plurality of imperforate baffles interposed between said housing and said inlet tube, said venturi section, and said perforate tube, dividing the interior of said muffler into a plurality of sealed chambers, the end of said inlet tube in said muffler and the inlet of said venturi section both being disposed in the same one of said chambers.

4,361,207

APPARATUS AND METHOD FOR DRAINING ENGINE CRANKCASE

Roland Sylvestre, 7 Caribou Dr., Norwich, Conn. 06360, and Vallier Paradis, P.O. Box 51, Baltic, Conn. 06330

Filed Nov. 7, 1980, Ser. No. 204,862

Int. Cl.³ F01M *11/04*

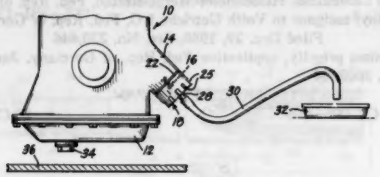
U.S. Cl. 184—1.5 **4 Claims**

4. A method of draining crankcase oil from an engine having

an oil pump and a spin-oil filter mounting pad including oil outlet and return ports associated therewith, comprising:

(a) starting and running the engine;

(b) using the engine oil pump to pump oil from the crankcase out through the oil outlet port into an adapter housing mounted on the oil filter mounting pad;



(c) permitting a portion of the pumped oil to flow back to the engine from the housing through the return port,

(d) draining a portion of pumped oil out of the housing away from the engine; and

(e) stopping the engine when oil ceases to flow out from the housing.

4,361,208

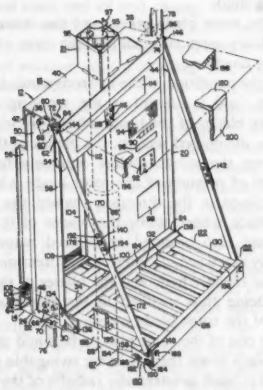
MODULAR ELEVATOR CAR

Leigh F. Jackson, Guilford Township, Franklin County, and George A. Kappenhagen, Stroud Township, Monroe County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 22, 1980, Ser. No. 219,206

Int. Cl.³ B66B *9/00*

U.S. Cl. 187—1 R **8 Claims**



1. A modular elevator car, comprising:

a car frame including horizontally oriented, vertically spaced top and bottom beam members, and at least one upstanding structural member which extends between and is fixed to said top and bottom beam member,

a composite platform assembly for the elevator car including a first platform section defined by the bottom beam of said car frame, and a second platform section,

and means pivotally connecting said second platform section to said car frame such that said second platform section is pivotable between a shipping position wherein the second platform section is substantially perpendicular to the first platform section, and an operating position wherein the first and second platform sections cooperatively define the platform assembly of the elevator car,

said second platform section defining a rectangular configuration having first and second corners adjacent to the car frame, and third and fourth remote corners, and first and second diagonal braces each having first and second ends, first fastener means fixing their first ends to the car frame, and second fastener means fixing the second ends of the first and second diagonal braces to the second platform section, at its third and fourth corners, respectively, with at least one of the first and second fastener means being adjustable such that the second platform section may be accurately aligned with the first platform section, in the operating position of the second platform section.

4,361,209

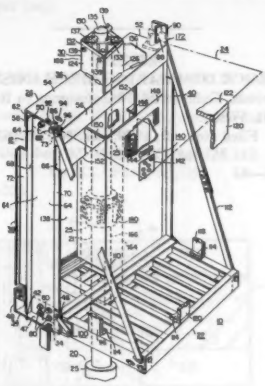
ELEVATOR SYSTEM

George A. Kappenhagen, Stroud Township, Monroe County, and Leigh F. Jackson, Guilford, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 22, 1980, Ser. No. 219,207

Int. Cl.³ B66B *11/04*

U.S. Cl. 187—17 **10 Claims**



7. An elevator system, comprising:

an elevator car having a platform, a cab on said platform, and a car frame for supporting said cab and platform,

said car frame including an elongated tunnel having a vertically oriented longitudinal axis, said tunnel having sidewall portions which define an opening which extends between lower and upper ends, with said upper end being at least partially closed and said lower end being open,

a hydraulic jack having a cylinder fixed below said elevator car with its longitudinal axis coaxial with the longitudinal axis of said tunnel, and at least one plunger, said at least one plunger having an upper end,

said hydraulic jack extending into the open lower end of said tunnel, with the upper end of said at least one plunger in contact with the at least partially closed upper end of said tunnel,

and stabilizer means in said tunnel fixed to said hydraulic jack, said stabilizer means coacting with at least certain of the sidewall portions of said tunnel to provide centering forces which promote coaxial alignment of said cylinder, said at least one plunger and said tunnel,

said at least partially closed upper end of the tunnel including a removable end plate, with said stabilizer means being located such that when the hydraulic jack is retracted and said removable end plate removed, the stabilizer means is adjacent to, and accessible through, the upper end of the tunnel.

9. An elevator system, comprising:

an elevator car having a platform, a cab on said platform, and a car frame for supporting said cab and platform,

said car frame including an elongated tunnel having a vertically oriented longitudinal axis, said tunnel having side-

wall portions which define an opening which extends between lower and upper ends, with said upper end being at least partially closed and said lower end being open,

a hydraulic jack having a cylinder fixed below said elevator car with its longitudinal axis coaxial with the longitudinal axis of said tunnel, and at least one plunger, said at least one plunger having an upper end,

said hydraulic jack extending into the open lower end of said tunnel, with the upper end of said at least one plunger in contact with the at least partially closed upper end of said tunnel,

and stabilizer means in said tunnel fixed to said hydraulic jack, said stabilizer means coacting with at least certain of the sidewall portions of said tunnel to provide centering forces which promote coaxial alignment of said cylinder, said at least one plunger and said tunnel,

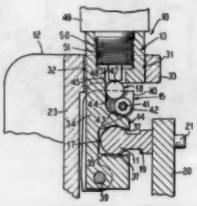
said stabilizer means including first and second similar half sections adapted to be placed about the hydraulic jack, and clamping means for clamping said first and second half sections in assembled relation about the hydraulic jack.

4,361,210

LOCK OR BRAKING MECHANISM

Gary L. Simonds, Gainesville, Fla., assignor to Beloit Corporation, Beloit, Wis.

Filed Nov. 19, 1979, Ser. No. 95,167
Int. Cl.³ B61H 7/12
U.S. Cl. 188—43 **9 Claims**



3. A mechanism for releasably locking or braking an elongate round way element and associated structure supported on said element selectively against a relative movement, comprising:

a member adapted to be mounted on said associated structure and having a recess through which said round way element is adapted to extend;

one side of said recess having a slot for clearing supporting bracket means of said element;

clutching surfaces within said recess converging toward said slot and adapted for releasably clutching engagement with one side of the elongate round way element;

an elongate locking lever extending across the opposite side of said recess;

means pivotally mounting one end portion of said lever on said member;

said locking lever having an intermediate gripping clamp clutch area engageable with said round way element generally opposite to said clutching surfaces;

and means carried by said member adapted to act on the opposite end portion of said lever for rocking said lever toward said round way element and said clutching surfaces for effecting locking gripping clamping thrust of said clutch area against said round way element and thrusting said element toward said clutching surfaces for thereby releasably locking or braking said element and said associated structure against said relative movement;

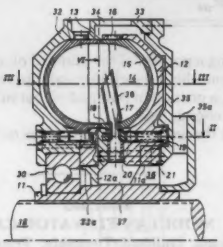
said means for rocking said lever comprising a roller mounted on said opposite end portion of said lever, transmission roller means having a perimeter engaging against and between said roller and a shoulder on said member, and power means adapted to drive against said transmission roller means perimeter for rocking said lever toward said round way element.

4,361,211

HYDRODYNAMIC BRAKE

Hans Lindenthal, Heidenheim-Mergelstetten, Fed. Rep. of Germany, assignor to Voith Getriebe KG, Fed. Rep. of Germany

Filed Dec. 29, 1980, Ser. No. 220,446
Claims priority, application Fed. Rep. of Germany, Jan. 10, 1980, 3000664
Int. Cl.³ F16D 57/04
U.S. Cl. 188—296 **18 Claims**



1. A hydrodynamic brake comprising:

a rotor blade wheel and an adjacent stator blade wheel, the blade wheels being respectively shaped and positioned for defining a toroidal working chamber between them;

an inlet into and an outlet from the working chamber for working fluid;

each of the rotor blade wheel and the stator blade wheel respectively supporting an annular array of blades in the working chamber;

at least in the condition of the hydrodynamic brake in which working fluid is present in the working chamber, and when the blades of the blade wheels are viewed in cylindrical or developed section, the blades of the rotor blade wheel are skewed to incline obliquely forward in the direction of rotation of the rotor blade wheel and being thus inclined in the direction toward the blades of the stator blade wheel, while the blades of the stator blade wheel are also oriented in skewed manner to incline obliquely rearward, counter to the direction of rotation of the rotor blade wheel, and the blades of the stator blade wheel being thus inclined in the direction toward the blades of the rotor blade wheel;

for at least one of the rotor blade wheel and the stator blade wheel, each blade thereof being swingable about a swing axis that extends substantially radially of the blade wheels; each of the swingable blades being swingable over a range from the respective skewed orientation thereof up to at least an orientation at which the blade is generally parallel to the rotation axis of the rotor blade wheel;

the toroidal chamber including a respective first torus wall which is located beyond those edges of the blades of the rotor blade wheel that are away from the blades of the stator blade wheel and a respective second torus wall which is located beyond those edges of the blades of the stator blade wheel that are away from the blades of the rotor blade wheel;

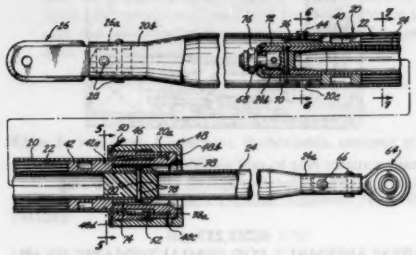
each torus wall adjacent the swingable blades being divided into separate, independently movable torus wall sections; individual sections of the respective torus wall being attached to different ones of he swingable blades for swinging therewith, to thereby change the orientation of the torus wall sections with the orientations of the swingable blades.

4,361,212

BIDIRECTIONAL MECHANICAL LOAD LIMITER

Per A. Bolang, Bellevue, and William B. Burstiner, Mercer Island, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 11, 1980, Ser. No. 215,278
Int. Cl.³ F16F 7/12
U.S. Cl. 188—377 8 Claims



1. A load limiter for a push-pull control linkage comprising a tubular casing open at one end, a tubular crushable core engaged coaxially in said casing, said crushable core having a central axial bore, an extension slide and a retraction slide engaged in said casing, said extension and retraction slides each being generally tubular and including a central axial bore, said extension and retraction slides being positioned adjacent and abutting the opposite ends of said crushable core in said casing, said retraction slide being adjacent the end of said crushable core nearest said open end of said casing, said casing having affixed to the inner wall surface thereof an extension stop and a retraction stop, said retraction stop and said extension stop being positioned adjacent to and abutting said extension slide and said retraction slide, respectively, to locate said extension and retraction slides and said crushable core between said stops within said casing, a piston coaxially engaged in said casing so as to pass through said bores of said crushable core and said slides and extend from said open end of said casing, said piston including a retraction impeller and an extension impeller affixed thereto adjacent and abutting said retraction slide and said extension slide, respectively, so as to locate said piston axially with respect to said crushable core in said casing, said retraction impeller being configured to move axially past said extension stop and said extension impeller being configured to move axially past said retraction stop, said piston and said casing cooperating at tensile loads greater than a predetermined maximum load in extension to crush said crushable core by movement of said piston, said extension impeller, and said extension slide toward said open end of said casing, said piston and said casing cooperating at compressive loads in excess of said predetermined maximum load in retraction to crush said crushable core by action of said retraction slide, said piston, and said retraction impeller being driven into said casing.

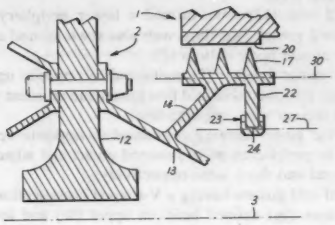
4,361,213

VIBRATION DAMPER RING

Delmer H. Landis, Jr., Loveland, and Malachi Lawrence, Jr., Cincinnati, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed May 22, 1980, Ser. No. 152,237
Int. Cl.³ F16F 7/10
U.S. Cl. 188—378 14 Claims

1. Means effective for damping vibration of an annular structural member including a neutral axis and an annular extension protruding only radially from said structural member, comprising a damper ring having a neutral axis and only a radially facing, annular recess therein for receiving said extension, and thereby mounting said damper ring on said structural member



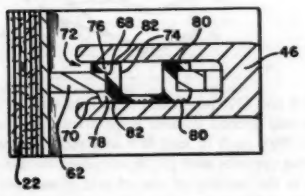
for radially spacing said neutral axes of said structural member and said damper ring.

4,361,214

DRUM BRAKE HAVING A VIBRATION DAMPING MEMBER

James K. Roberts, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jan. 15, 1981, Ser. No. 225,212
Int. Cl.³ F16D 65/08
U.S. Cl. 188—335 8 Claims



1. A drum brake comprising a pair of arcuate brake shoes which are engageable with a rotatable brake drum to retard rotation of said brake drum during a brake application, said brake shoes including radially-extending webs which are slidably received in radially-extending slots defined by a nonrotatable torque member, characterized in that said brake shoes carry yieldable resilient elastomeric members which are slidably received through axially-extending apertures defined by the webs of said brake shoes, said elastomeric members extending axially on both sides of said brake shoe webs to frictionally engage said torque member, and said elastomeric members define a pair of oppositely-disposed irregular surfaces, said irregular surfaces slidably engaging said torque member.

4,361,215

GUSSETED SUIT CASE

Masatake Sawai, 2-16, Siozu-cho, Toyooka City, Hyogo Prefecture, Japan

Filed Jul. 25, 1980, Ser. No. 172,150
Int. Cl.³ A45C 7/00
U.S. Cl. 190—18 A 2 Claims

1. An expandable suit case comprising:

a rectangular body (1) having end walls (1*a*), side walls (1*b*), a bottom (2) and arched top (1*c*) arched between said end walls and extending between said side walls, said arched top having an opening extending between said end walls and a fastener (8) for closing said openings;

a first web (12*b*) sewn around a lower periphery of said body end and side walls;

a first gusset (9_1) connected to and extending around said first web;

a second web (**12***a*) sewn around a lower periphery of said first gusset;

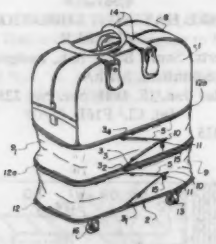
a second gusset (**9**) connected to and extending around said second web;

a third web (**12**) sewn around a lower periphery of said second gusset, said third web also sewn around a periphery of said body bottom (**2**);

a first gusset fastener (**5**) connected to opposite upper and lower peripheries of said first gusset and adjacent said first and second webs respectively;

a second gusset fastener connected to opposite upper and lower peripheries of said second gusset and adjacent said second and third webs respectively;

each of said gussets having a V-shaped cross-section having an apex (**9***g*) defined between upper (**9***e*) and lower (**9***f*) gusset portions, each of said first and second gussets having end walls (**9***a*, **9***b*) and side walls (**9***c*, **9***d*) extending downwardly of said body end walls and side walls respectively, each of said first and second gusset fasteners having



a first end (**10**) positioned on a side wall of each of said first and second gussets respectively and adjacent said apex (**9***g*), each of said first and second gusset fasteners having opposite ends (3_1, 3_2) disposed on one of said webs and in the vicinity of one of said gusset side walls, said gusset fastener opposite ends extending beyond each of said gusset fastener first ends so that at least a portion of each of said first and second gusset fasteners overlap;

each of said first and second gussets having a closed position with said first and second gusset fasteners fastened and said first, second and third webs disposed adjacent each other, and an expanded position with said first and second gusset fasteners unfastened and said first, second and third webs spaced from each other;

apexes of said gusset side walls moving toward each other and apexes of said gusset end walls moving toward each other with said first and second gussets moving from said expanded position to said closed position; and

a plurality of casters connected to a bottom surface of said body bottom.

4,361,216

ROLLER CLUTCH ACTUATOR

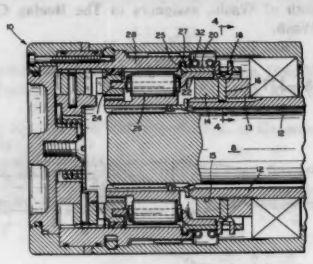
Robert B. Overbeek, Rochelle, Ill., assignor to Dana Corporation, Toledo, Ohio

Filed May 12, 1980, Ser. No. 149,068

Int. Cl.³ F16D *41/10*

U.S. Cl. 192—36 **10 Claims**

1. In a roller clutch system for driving a wheel hub about a wheel spindle, said system including a cage containing a plurality of rollers circumferentially spaced about the wheel spindle, said cage positioned intermediate of said spindle and said wheel hub, said cage including a friction ring and an actuator ring in resilient frictional engagement with said friction ring; an improvement comprising a torque transfer ring resiliently cou-



pling said actuator ring to said spindle, and means for frictionally biasing said actuator ring against said friction ring.

4,361,217

CLUTCH ASSEMBLY FOR SEMIAUTOMATIC GEAR TRANSMISSION

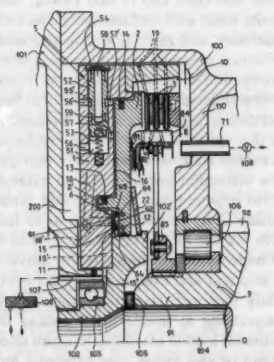
Gerold Bieber, Langenargen; Franz Boss, Kressbronn, and Alfred Magg, Friedrichshafen, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Fed. Rep. of Germany

Filed Oct. 16, 1980, Ser. No. 197,598

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1979, 2941935

Int. Cl.³ F16D *25/063*

U.S. Cl. 192—103 FA **10 Claims**



1. In an automotive transmission including a torque converter powered by an engine aboard a vehicle, a manually shiftable gear train coupled with vehicular traction wheels, and a friction clutch inserted between said torque converter and said gear train for temporarily decoupling the latter from the engine during changes in speed ratio,

the improvement wherein said friction clutch comprises:

a driving friction-element carrier rotatable about an axis and coupled with said torque converter for entrainment by the engine;

a driven friction-element carrier rotatable about said axis and coupled with said gear train for powering the traction wheels during operation of the vehicle;

a piston interposed between said driving and driven carriers, said piston forming with said driving carrier a first and a second cylinder space fluidically separated from each other, said first cylinder space having an inlet connectable to a source of hydraulic pressure fluid for moving said piston into a position of engagement of the friction elements of said carriers, said piston being provided with

spring means for moving same into a position of disengagement of said friction elements upon disconnection of said inlet from said source, said driving carrier being provided with passages forming an exit port communicating with said second cylinder space; and

valve means on said driving carrier responsive to fluid pressure in said first cylinder space for blocking said exit port while connecting said inlet via part of said passages to said second cylinder space whereby entering pressure fluid helps displace said piston into its position of engagement, said valve means being biased to unblock said exit port upon disconnection of said inlet from said source to vent said second cylinder space to an adjoining low-pressure area.

4,361,218

COIN TESTING APPARATUS

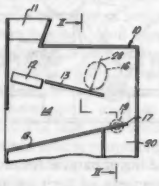
Klaas P. Van Dort, Gorinchem, Netherlands, assignor to Mars, Incorporated, McLean, Va.

Filed Mar. 26, 1980, Ser. No. 134,086

Claims priority, application United Kingdom, Mar. 30, 1979, 7911312

Int. Cl.³ G07D *5/02*

U.S. Cl. 194—102 **16 Claims**



1. A multidenomination coin testing apparatus for performing a diameter sensitive test on coins, said apparatus having a relatively high sensitivity to variations in coin diameter over a relatively large range of coin diameters, said apparatus comprising a coin passageway, a coin track along which coins pass on their edges and substantially in a predetermined plane through the coin passageway, and inductive coin examining means arranged to produce an oscillating magnetic field in the coin passageway and to respond to the interaction between a coin travelling in the passageway and the oscillating magnetic field, the coin examining means including an inductor adjacent the coin passageway connected in a coin acceptability testing circuit arranged to determine whether the interaction corresponds to the interaction for an acceptable coin, the inductor comprising a coil which is oblong, has the major axis of its oblong shape substantially parallel with said plane and transverse to the path of a coin along the track, is located alongside the passageway, and has the axis of the magnetic field directed through said plane, the inductor being arranged with the lower edge of its coil spaced above the coin track.

4,361,219

SWIVELLING ARRANGEMENTS

William R. Aldridge, and Stanley Walmsley, both of Wigan, England, assignors to Coal Industry (Patents) Limited, London, England

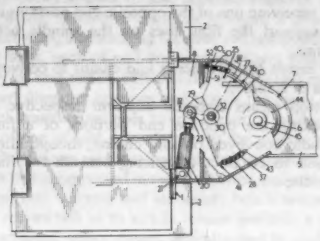
Filed Aug. 25, 1980, Ser. No. 180,566

Claims priority, application United Kingdom, Sep. 28, 1979, 7933802

Int. Cl.³ B65G *21/10, 65/02*

U.S. Cl. 198—315 **7 Claims**

1. A swivelling arrangement for controlling relative angular movement between two components, comprising a ram secured to one of the components and to a first limb of a yoke; said yoke having three limbs and being pivotally secured to said one component for pivotal movement under the action of the ram; a drive member fixedly attached to second and third limbs of the yoke and arranged to drivably engage a pivotable driven member fixedly secured to the other of the two components such that the pivotal axis of the driven member is co-axial



with the axis of relative angular movement between the two components, said first limb being shorter than said second and third limbs.

4,361,220

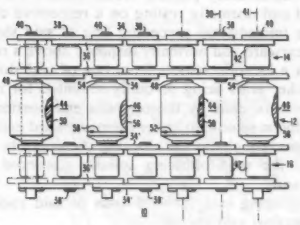
DRIVE CHAIN

Joseph K. Kraft, Parsippany, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 25, 1981, Ser. No. 238,261

Int. Cl.³ B65G *9/12, 23/14*

U.S. Cl. 198—330 **7 Claims**



1. A multiple strand drive chain, comprising:

at least one driven strand,

and at least one driving strand,

said at least one driving strand having a plurality of rollers spaced from one another on parallel axes, with alternate rollers being constructed of a resilient material and the intervening rollers being constructed of a rigid material,

said alternate and intervening rollers having first and second predetermined different diameters, respectively, with the second predetermined diameter being less than the first predetermined diameter, enabling the load on said driving strand to be distributed over a plurality of alternate rollers, with the maximum load on any one of said alternate rollers being limited to a value responsive to the difference between said first and second predetermined roller diameters.

4,361,221

FILM TRANSPORTING APPARATUS

Vratislav M. Michal, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 14, 1980, Ser. No. 195,984

Int. Cl.³ B65G *47/26*

U.S. Cl. 198—459 **1 Claim**

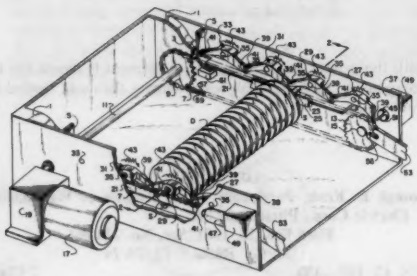
1. Apparatus for transporting banks of film discs supported on respective spindles between opposite end portions of the spindles and for spacing the spindles to prevent the banks of

film discs from contacting each other, said apparatus comprising:

two substantially parallel transport chains including respective series of chain links, each of said links having a nest for receiving one of the opposite end portions of a spindle to support the film discs on the spindle between said chains;

drive means for advancing said chains to convey a succession of spindles;

two stop means disposed adjacent respective chains for blocking the opposite end portions of a forwardmost spindle conveyed on said chains, though allowing said chains to continue advancing beneath the forwardmost spindle;



a pair of substantially parallel rocker arms each having a forward end normally resting on a respective chain at a location immediately preceding one of said stop means and a rearward end normally disposed above a respective chain at a location remote from one of said stop means, said rocker arms being pivotally mounted for raising of their forward ends by the opposite end portions of the forwardmost spindle to lower their rearward ends toward said respective chains for blocking the opposite end portions of the next-following spindle conveyed on said chains; and

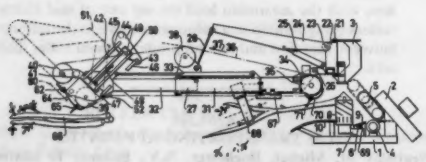
means for urging said forward ends of said rocker arms lightly against said chains.

4,361,222

APPARATUS FOR FEEDING LONGITUDINAL HETEROGENOUS GOODS

Hans O. Sall, Garpenberg, Sweden, assignor to The Swedish University of Agricultural Sciences, Garpenberg, Sweden

Continuation of Ser. No. 62,967, Aug. 2, 1979, abandoned, which is a continuation of Ser. No. 826,953, Aug. 22, 1977, abandoned.
This application Nov. 25, 1980, Ser. No. 210,365
Claims priority, application Sweden, Aug. 24, 1976, 7609353
Int. Cl.³ B65G *47/86*
U.S. Cl. 198—519 **7 Claims**



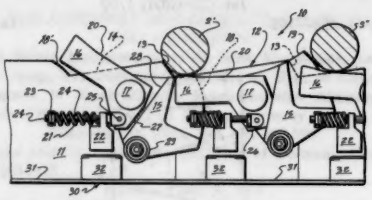
1. An apparatus for feeding elongated parts piled with at least approximate parallelism, to a process machine having an infeed spaced from an end of the pile of parts and adapted to receive the parts endwise, said apparatus comprising an arm adapted to be positioned at a level above said pile and so as to span the space from the pile to the machine when positioned at least approximately in alignment with said parts, said arm having a pivoted inner end adjacent to said infeed and a vertically swinging outer end, an endless traveling series of interspaced grapples carried by said arm through a span running longitudinally under the arm from its outer end to its inner end, actuating means for causing the grapples to sequentially clamp one or more of said parts when over said pile so as to engage and pull the part or parts endwise to said infeed, means for causing the grapples to release the part or parts at said infeed, and means for causing said travelling series of grapples to momentarily travel in an upward direction relative to said arm substantially as soon as they are caused to clamp and to thereafter travel more directly towards said infeed.

4,361,223

MATERIAL HANDLING APPARATUS

Donald O. Johnson, Matawan, N.J., assignor to American Can Company, Greenwich, Conn.

Filed Dec. 1, 1980, Ser. No. 211,561
Int. Cl.³ B65G *25/00*
U.S. Cl. 198—751 **12 Claims**



1. A material handling apparatus for moving generally cylindrical articles transversely of their polar axes along a travel path, comprising:

means defining a track extending along said travel path and including a series of upwardly extending article stop surfaces interspersed with inclined surfaces extending downwardly from a stop surface to the base of the successive stop surface in the direction of travel of said articles;

a series of article lifting levers spaced along said track in correspondence with said series of stop surfaces and said inclined surfaces, each said lifting lever mounted for pivotation about an axis extending transversely of said travel path, and having its center of gravity to the side thereof opposite the recited direction of travel of said articles, each said lifting lever including an article stop surface and an article lifting surface movable, upon pivotation thereof to an upper extended position, into positions ahead of the corresponding one of said article stop surfaces on said track and above the corresponding inclined surface, and, upon pivotation thereof to a lower retracted position, into positions below said inclined surface;

a series of article lowering levers pivotable about said first axis of each said lifting lever and positioned to overlap the next successive lifting lever in the direction of travel and in the region of its lifting and stop surfaces, each said lowering lever having an upwardly facing lowering surface movable between an extended position in which it is inclined upwardly above a corresponding one of said inclined surfaces, and a retracted position in which at least a portion thereof is beneath the level of one of said inclined surfaces;

each said lowering lever including an abutment engageable with an abutment provided on its corresponding lifting lever upon movement of said lowering lever to retracted position, responsive to presence of an article on the corresponding inclined surfaces, whereby said lifting lever is held in its extended position;

means resiliently urging said lowering lever to said extended position; and

drive means operative to engage and move one of said lifting

levers from its recited retracted position to its recited extended position, to lift an article over said stop surfaces, and to disengage and accommodate gravitational movement thereof to its recited retracted position, and permit an article to roll along an inclined surface and engage a lifting lever's stop surface.

4,361,224

ROLLER MOTION SENSING ACCUMULATOR

Clyde Bowman, Grand Rapids, Mich., assignor to Lear Siegler, Inc., Grand Rapids, Mich.

Filed May 19, 1980, Ser. No. 150,820
Int. Cl.³ B65G *13/07*
U.S. Cl. 198—781 **20 Claims**

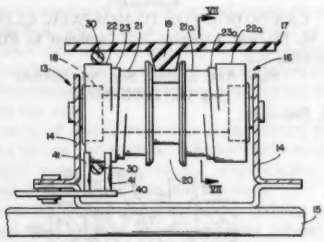
1. An article conveyor and accumulator having a plurality of rotatable article supporting elements forming an article conveying surface, a powered belt for propelling articles along said conveying surface, a plurality of support units supporting said powered belt from beneath, said support units being arranged in groups lengthwise of said conveyor, an article motion sensing and transmitting means for each group responsive to the movement of an article superimposed above it and drivingly connected to the support units of the next upstream group; said support units of said next upstream group holding the powered belt in raised article propelling position when said motion sensing and transmitting means is in motion and lowering the powered belt into accumulation position when said motion transmitting means is stationary.

4,361,225

ACTUATOR BELT ACCUMULATOR

Charles W. Saur, Sparta, Mich., assignor to Lear Siegler, Inc., Grand Rapids, Mich.

Filed Sep. 18, 1980, Ser. No. 188,314
Int. Cl.³ B65G *13/06*
U.S. Cl. 198—781 **2 Claims**



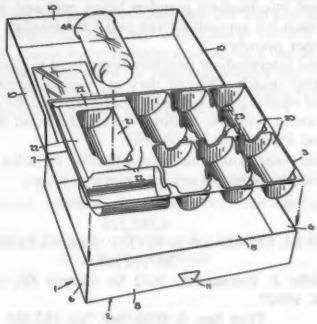
1. In an accumulator having rotatable means forming an article supporting and transporting surface, a driven belt for propelling articles along said conveyor and means for supporting said belt in a raised article propelling position and in a lowered article released position, said means characterized in having a plurality of rollers beneath said belt; said rollers lengthwise being symmetrical about their midpoint; said rollers being arranged in groups, each group including a plurality of rollers; a plurality of endless secondary belts, each secondary belt being entrained over a plurality of said rollers; each of said rollers having a pair of portions of maximum diameter and a pair of portions of reduced diameter, said portions of maximum diameter being spaced apart, one adjacent each end of the roller, each of said portions of reduced diameter being adjacent one of said portions of maximum diameter, a belt guiding central channel between said reduced diameter portions; a spiral ramp between each of said reduced diameter portions and its adjacent maximum diameter portion; a plurality of tracking members, one tracking member engaging each of said secondary belts, each of said tracking members being moveable axially of said rollers between one pair of said maximum and reduced diameter portions and across the ramp therebetween; each tracking member having a pair of guides, one on each side of one of said secondary belts for moving said secondary belt between said maximum diameter portion wherein said driven belt is supported in raised position and said reduced diameter portion wherein said secondary belt is lowered lowering said driven belt to its article release position; a plurality of article actuated sensor means, one attached to each of said tracking members.

4,361,226

DISPLAY PACKAGE AND THE LIKE

Jack R. Travis, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Continuation of Ser. No. 180,342, Aug. 22, 1980, abandoned.
This application Nov. 23, 1981, Ser. No. 323,829
Int. Cl.³ B65D *25/54, 5/50, 85/62*
U.S. Cl. 206—45.31 **2 Claims**



1. A display package comprising an outer container and a cover hingedly mounted thereto and adapted to pivot from an open position to a closed position overlying the outer container, a one piece insert having article-holding pockets therein removably mounted within the outer container for holding articles therein, said article-holding pockets being formed by integral pocket-forming dividers, said outer container having side, end and bottom walls, said side, end and bottom walls being devoid of windows, said cover having a single window therein, said window being so positioned and so dimensioned so that a predetermined single article only in a predetermined single pocket may be seen through the outer container when the cover is in said closed position, the predetermined pocket for the predetermined single article seen through said window is spaced from the other article-holding pockets by pocket-forming dividers which are wider than the other pocket-forming dividers, said window being near a corner of said cover and said predetermined article and predetermined pocket being near a corner of said insert underlying the corner of said cover when the cover is in its closed position, said window and said predetermined pocket adapted to align with each other when the cover is in its closed position to permit the predetermined single article to be seen through the said window.

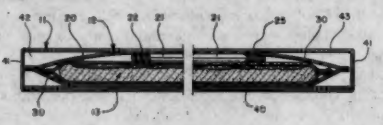
4,361,227
DISPLAY PACKAGE

Jeno F. Paulucci, Duluth, Minn., assignor to Jeno's, Inc., Duluth, Minn.

Continuation-in-part of Ser. No. 221,400, Dec. 30, 1980, abandoned, which is a continuation of Ser. No. 80,930, Oct. 1, 1979, abandoned. This application May 4, 1981, Ser. No. 260,414

Int. Cl.³ B65D *65/16*

U.S. Cl. 206—45.32 **3 Claims**



1. A display package for multiple ingredient frozen food products marketed in semi-completed form, comprising:

a. an outer container fabricated of semi-rigid material and having a front wall and a back wall;

b. a cut-out creating an opening in the front wall; and,

c. an inner container within said outer container;

d. said inner container including an inner member, an outer pouch, and a plurality of intermediate pouches;

e. said inner member comprising a sheet of plastic film material which overlies a food product base;

f. said outer pouch consisting of a plastic shrink film material which is heat shrunk onto said food product base over said inner member;

g. each of said intermediate pouches consisting of a plastic film material and loosely enclosing a separate ingredient;

h. said intermediate pouches being enclosed by said outer pouch but separated from said food product base by said inner member;

i. said intermediate pouches being held in position by said outer pouch whereby they are visible through said cut-out opening in said outer container and the plastic films form a window through which the food product base and ingredients are visible;

j. said outer pouch having a plurality of holes formed in it prior to being shrunk into place.

4,361,228
NOVEL CONTAINER TO IMPREGNATE SHAVING BRUSHES

Alexander J. Hernandez, 2632 St. George St., Los Angeles, Calif. 90027

Filed Sep. 2, 1980, Ser. No. 183,280

Int. Cl.³ B65D *85/14, 51/24*

U.S. Cl. 206—216 **1 Claim**

1. A container attachable to a shaving cream tube for impregnating a shaving brush, said tube having screw threads and a cap, said container comprising:

a container wall defining a hollow cylinder having a first longitudinal axis, an inner surface, an outer surface, an upper axial end and a lower axial end, wherein the diameter of said cylinder is greater than the axial height thereof, wherein said upper end of said container wall defines a perimetric thickening having an external diameter greater than said diametric of said cylinder; and wherein said lower end of said container wall is open with rounded edges;

a base wall fixed to the inner circumference of said lower end and tapering radially inwards and towards said upper end so as to close said lower end and to define a truncated cone shaped space;

a cylindrical opening having walls defined by the radially innermost portion of said base wall, said opening being concentric with said container wall and separating said cone shaped space from the interior of said container;

screw threads on said cylindrical opening walls, said screw threads being matable with said screw threads of said tube;

a first body defined by a solid of revolution about a second axis, the axial height of said first body being less than said height of said container, the diameter of said first body being smaller than the diameter of said inner surface of said container wall, said first body having axially upper and lower ends, said upper end of said first body tapering radially inwardly and away from said lower end of said first body;

a second body defined by a cylindrical body coaxial with said first body, said second body having a lower axial end merging with said upper end of said first body, and a

convex curved upper end, the diameter of said second body being greater than the axial height thereof, the height of said second body being greater than the height of said first body, said first and second bodies together defining a cap for said container; and

means for holding said tube cap, said means for holding comprising a cylindrical hollow coaxial with said first and second bodies and extending from said lower end of said first body towards said upper end of said second body, said tube cap being housed in said hollow.

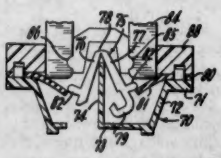
4,361,229
CARTRIDGE FOR HEMOSTATIC CLIPS

Robert W. Mericle, Lebanon, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Filed Aug. 3, 1981, Ser. No. 289,430

Int. Cl.³ B65D *85/24*

U.S. Cl. 206—339 **8 Claims**



1. A cartridge for holding a plurality of bio-compatible, non-metallic hemostatic clips, each of said clips having a pair of leg members connected at their proximal ends by a resilient hinge, said clips having removing means on the outer surfaces of said leg members by which the clips may be removed from said cartridge by a forceps-type applying instrument, said cartridge comprising:

(a) a base member, said base member being divided into a plurality of compartments, each of said compartments

including a recessed ledge on which the hinge of the clip is adapted to be placed, with the legs extending into the compartment on opposite sides of said ledge;

(b) a deflectable holding means comprising a patterned piece of paper and engaging the clip removing means on both legs of said clip, and

(c) a cover member disposed on top of the base member and exposing the clips in separate compartments whereby the jaws of a forceps type applying instrument may be inserted through an opening in the cover member into a compartment to deflect the holding means and engage the removing means on the outer surface of the leg member of said clip and remove said clip from said cartridge.

4,361,230

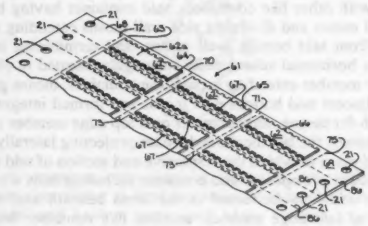
ASSEMBLY OF TUBULAR SLEEVE MARKERS

Gerald T. Downing, Port Washington; Eugene R. Stepanski, Brown Deer, and Gary J. Wirth, Milwaukee, all of Wis., assignors to W. H. Brady Co., Milwaukee, Wis.

Filed Sep. 28, 1981, Ser. No. 306,044

Int. Cl.³ B65D *85/20, 63/00*

U.S. Cl. 206—345 **12 Claims**



1. An assembly of individual tubular sleeve markers detachably joined together comprising, in combination:

(1) a base web and a top web of flexible sheet material arranged in face-to-face relationship and having longitudinal axes disposed parallel to one another,

the top web having first and second longitudinal edges spaced inwardly of first and second longitudinal edges of the base web, and the base web including a first marginal edge portion extending beyond the first longitudinal edge of the top web and a second marginal edge portion extending beyond the second longitudinal edge of the top web;

(2) a plurality of spaced transverse seams joining the base web and the top web together at preselected intervals, the transverse seams being arranged perpendicular to the longitudinal axes of the base and top webs,

each adjacent pair of transverse seams defining opposed closed edge portions of an individual tubular sleeve marker;

(3) first separable line means defined in the first marginal edge portion of the base web and second separable line means defined in the second marginal edge portion of the base web, the first and second separable line means each being parallel to the longitudinal axis of the base web,

the first separable line means and the first longitudinal edge of the top web defining a first open end of a sleeve marker, and the second separable line means and the second longitudinal edge of the top web defining a second open end of a sleeve marker; and

(4) each individual tubular sleeve marker being detachable from the assembly along said transverse seams and said separable line means.

4,361,231

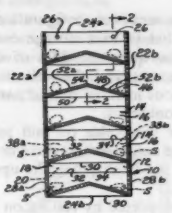
SPONGE COLLECTION DEVICE

Donald Patience, Cary, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Mar. 18, 1981, Ser. No. 245,008

Int. Cl.³ B65D *30/22, 33/02, 33/14, 85/00*

U.S. Cl. 206—362 **6 Claims**



1. A sponge collection device, comprising:

a backing sheet of flexible material having a front surface, a rear surface, a pair of side edges, and a pair of end edges connecting the side edges; and

a plurality of pockets progressively disposed on the front surface of the backing sheet intermediate said end edges, said pockets comprising a flap of flexible material having a pair of side edges, and an upper edge extending between said side edges, with side portions of the flap adjacent its side edges being joined to the backing sheet adjacent the side edges of the backing sheet, with the upper edge of the flap defining an opening intermediate the flap and backing sheet to receive sponges, and with a lower portion of the flap being joined to the backing sheet along a line intermediate the side portions of the flap, said joinder line extending upwardly from each of the flap side portions toward a raised central portion of the joinder line.

4,361,232

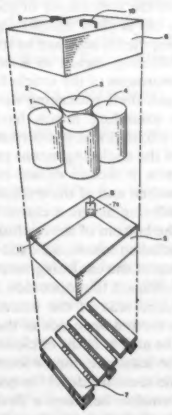
PROTECTIVE CONTAINER

John H. Olmsted, 16116 W. El Dorado Dr., New Berlin, Wis. 53151

Filed Dec. 19, 1979, Ser. No. 105,075

Int. Cl.³ B65D *19/00*

U.S. Cl. 206—386 **6 Claims**



1. The combination of a transportable container and a plurality of primary storage containers disposed therein and each having a generally cylindrical configuration defined by a side

wall and a pair of opposite ends, said storage containers being constructed and arranged for containing environmentally hazardous materials,

said transportable container including a solid pan having a base for supporting one end of each of said storage containers and a side wall extending upwardly from said base, the volume of said pan as defined by said base and said side wall being at least twice that of any one of said storage containers,

the horizontal cross-sectional configuration of said pan being different from that of said storage containers whereby gaps will exist between the sides of said pan and said storage containers to permit the collection of said environmentally hazardous material in said pan should the same leak from said containers,

a removable cover receivable on said pan and above the other ends of said containers, said cover having a depending side portion for overlapping the upwardly extending wall of said pan,

said cover being supported by resting on said storage containers,

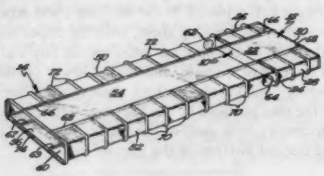
said pan and cover being constructed of sheet metal.

4,361,233

ANTI-THEFT PACKAGING DEVICE

Howard P. Holkestad, 3983 Hunters Hill Way, Minnetonka, Minn. 55343

Filed Jan. 18, 1982, Ser. No. 340,558
Int. Cl.³ B65D *85/672*
U.S. Cl. 206—387 **18 Claims**



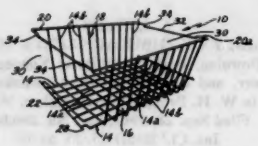
1. Anti-theft device for packaging an article such as a recording tape having a first end edge, a second end edge, a first side edge, a second side edge, a top surface, and a bottom surface defining its dimensions, comprising, in combination: means for enclosing the article including a first closed side, a second open side, a first closed end, a second closed end, a closed bottom, and a closed top defining the dimensions of the enclosing means, with the dimensions of the article being approximately equal to but slightly smaller than the dimensions of the enclosing means; means attached to the enclosing means for extending the enclosing means to enlarge the enclosing means beyond the dimensions of the article for preventing easy concealment of the anti-theft packaging device by a perspective thief, with the extending means having an elongated length and including a first closed end formed by the continuation of the first end of the enclosing means past the second side of the enclosing means, a second closed end formed by the continuation of the second end of the enclosing means past the second side of the enclosing means, a closed bottom formed by the continuation of the bottom of the enclosing means past the second side of the enclosing means, a closed top formed by the continuation of the top of the enclosing means past the second side of the enclosing means, a first open side, and a second open side, with the first open side of the extending means being coincidental with the second open side of the enclosing means; means for retaining the article in the enclosing means comprising, in combination: at least one dimple located in the extending means adjacent the second side of the enclosing means and nondestructibly deformable between a first position located outside of the extending means and a second position located inside of the extending means and abutting with the article located in the enclosing means for preventing removal of the article from the enclosing means, with the length of the extending means and the size of the second open side of the extending means having a relationship to prevent the engagement of the dimple inside of the extending means by a human appendage such as a finger.

4,361,234

TIERABLE AND NESTABLE CONTAINER

Daniel D. Hawes, Chagrin Falls, and Edward W. Massey, Parma, both of Ohio, assignors to Bliss & Laughlin Industries Incorporated, Oak Brook, Ill.

Filed Mar. 16, 1981, Ser. No. 244,218
Int. Cl.³ B65D *21/04*
U.S. Cl. 206—505 **6 Claims**



1. A container formed of wire and adapted for tiering and nesting with other like containers, said container having bottom wall means and diverging side wall means extending upwardly from said bottom wall means, and terminating in a generally horizontal substantially rectangular shaped in plan, top edge member extending around the container, means generally adjacent said bottom wall means and formed integrally therewith for tiering said container on a top edge member of a like container, the last mentioned means projecting laterally of a vertical plane in which the respective end section of said top edge member is disposed, said container including ends which are open and non-obstructed in the areas beneath said end sections of said edge member, another like container being adapted to be nested in said first container by entering the other container into the open top of said first container in a tilted position, so that the tiering means of the entering container may pass through said open area of one end of the first container and through said plane and beneath said respective end section of said edge member of said first container, and then the entering container may be moved generally vertically to cause the entering container to nest into the first or receiving container, said end sections of said top edge member each including an intermediate portion which is recessed downwardly with respect to the horizontal plane of the side sections of said top edge member, said bottom wall means comprising a plurality of elongated spaced wire members extending generally parallel to said side wall means, the distal ends of at least certain of said wire members being bent diagonally upwardly and then diagonally downwardly to form a generally inverted V-shape providing said tiering means, said side wall means being comprised of spaced generally vertically extending wire members which are connected into pairs at their lower ends by transversely extending wire sections, crossing said bottom wall wire members, and being secured thereto at areas of engagement, said recessed portions of said end sections of said top edge member being adapted to receive said tiering means of an overlying tiered container, and providing spaced shoulders on said edge member end sections for limiting lateral movement of a tiered container with respect to the supporting container, and wherein said tiering means on each end of said container includes means providing an abutment stop, said stop comprising an elongated linear member having opposite terminal ends and disposed closely adjacent the distal ends of said diagonally extending downwardly directed sections of said tiering means, and secured thereto on the under sides thereof, and providing the sole interconnection of the inverted V-shaped tiering means together on the respective end of the container, said elongated stop member extending generally in a direction

transverse of the direction of extension of said wire members of said bottom wall means, and generally parallel to said transversely extending connecting wire sections of said paired side wall wire members, the apexes of said tiering means being generally disposed in a vertical plane containing the overlying respective end section of said top edge member, and each said elongated stop member being of a lesser length as compared to the transverse distance between said side sections of said top edge member, and of a length providing for said nesting of said container without interference between said stop member and the side wall means of the receiving container.

4,361,235

CONTAINERS MADE OF THIN PLIABLE SYNTHETIC MATERIAL, AND PROCESS OF MANUFACTURING IT

Raoul L. A. Gautier, Vittel, France, assignor to Societe Generale des Eaux Minerales de Vittel, Vittel, France

Division of Ser. No. 11,066, Feb. 12, 1979, Pat. No. 4,216,639. This application Jan. 18, 1980, Ser. No. 113,390

Claims priority, application France, Feb. 15, 1978, 78 04233

Int. Cl.³ B65D 5/50

U.S. Cl. 206—527 **15 Claims**

1. A container comprising at least two side walls and a bottom comprising at least one sheet of thin pliable synthetic material and having juxtaposed edges welded together to provide first and second welded joints extended from said bottom and spaced apart a distance corresponding to the dimension of the container taken along said bottom to define the interior of the container between the inner surfaces of said side walls, said side walls also being welded together along a line to provide a third welded joint dividing the interior of the container into a main cavity between said first welded joint and said third welded joint, for containing a liquid, and a closed pocket of smaller volume between said second welded joint and said third welded joint filled with a gas under pressure to form a handle for gripping the container, said main cavity and said handle being in side-by-side relation between said first and second welded joints such that the outer surfaces of said side walls are externally exposed, said container bottom being constructed to cause said container to be self-supporting when placed with said bottom on a supporting surface, said handle stiffening the container thereby imparting stability to the container enabling the container to remain in a steady position when placed with said bottom on a supporting surface and to remain upright after opening thereof.

4,361,236

CARTON FOR MAILING AND STORAGE OF CHECKS

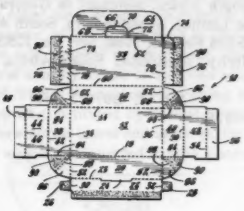
John J. Lavery, Chicago, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Feb. 4, 1981, Ser. No. 231,385

Int. Cl.³ B65D 5/54

U.S. Cl. 206—611 **3 Claims**

1. A carton for mailing and storage of checks comprising:
a front wall,
a rear wall,
a bottom wall connecting said front and rear walls,
and means forming side walls extending between said front and rear walls,
a web corner panel having a diagonal score line substantially bisecting said panel between each of said side walls and said rear and front walls,
means adhesively connecting the bisected portion of each of said web corner panels adjacent to the said side wall to said side wall,
means connected to each of said side walls for locking said side walls, front, rear and bottom walls in a rectangular parallelopiped configuration,
a top wall adapted to overlie said bottom wall in a substantially parallel relation thereto foldably connected to one of said front and rear walls, said top wall including
a tuck flap for insertion adjacent said front wall between said opposed side walls, and



means for connecting said top wall to said side walls, said means including
rupturable panels connected to opposed side edges of said top wall and adapted to be adhesively connected to opposed side walls of said carton, each of said rupturable panels including
a tear strip bounded by a pair of rupture lines, and
a terminal adhesive panel connected to said tear strip by one of said rupture lines, said adhesive panel being secured to the side wall adjacent thereto;
said front wall including a pair of overlapped panels having an accessible space therebetween, and
a front lock stabilizing panel cut in said tuck flap received in said accessible space between said overlapped panels.

4,361,237

HEAT SEALABLE PACKAGING FILM PRODUCING A PEELABLE SEAL

Robert Heiremans, Mariakerke; Roland Jacobs, Wetteren, and Marc D'Hondt, Nazareth, all of Belgium, assignors to UCB Societe Anonyme, Drogenbos, Belgium

Filed Jun. 17, 1981, Ser. No. 274,366

Claims priority, application United Kingdom, Jun. 20, 1980, 8020329

Int. Cl.³ B65D 5/64

U.S. Cl. 206—631 **7 Claims**

1. A heat sealable packaging film producing a peelable seal comprising
(a) 50 to 70% by weight of at least one ethylene polymer having a melt index of 0.5 to 7 g/10 min and selected from polyethylene having a density of from 0.910 to 0.925 g/cm³ and an ethylene-vinyl acetate copolymer containing at most 7% by weight of vinyl acetate,
(b) 20 to 30% by weight of at least one ethylene-vinyl acetate copolymer containing 20 to 30% by weight of vinyl acetate and having a melt index of 0.5 to 7 g/10 min, and
(c) 10 to 20% by weight of a styrene homopolymer having a melt index of 0.5 to 7 g/10 min.

5. A package comprising (1) a container made from polystyrene or from high-impact polystyrene, said container having a base and a sidewall which extends upwardly therefrom and terminates at its upper end in a radially outwardly directed flange, and (2) a covering film for said container made from a packaging film comprising
(a) 50 to 70% by weight of at least one ethylene polymer having a melt index of 0.5 to 7 g/10 min and selected from

polyethylene having a density of from 0.910 to 0.925 g/cm^3 and an ethylene-vinyl acetate copolymer containing at most 7% by weight of vinyl acetate,

(b) 20 to 30% by weight of at least one ethylene-vinyl acetate copolymer containing 20 to 30% by weight of vinyl acetate and having a melt index of 0.5 to 7 g/10 min, and

(c) 10 to 20% by weight of a styrene homopolymer having a melt index of 0.5 to 7 g/10 min,

said covering film being heat sealed to said radially outwardly directed flange by a peelable seal.

4,361,238

ORE SORTER

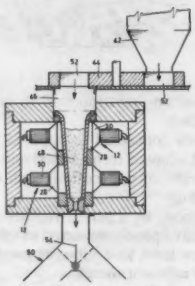
Wellesley A. Kealy, Beckley, England, and Rolf C. Bohme, Kyalami, South Africa, assignors to General Mining Union Corporation Limited, Johannesburg, South Africa

Filed Feb. 28, 1980, Ser. No. 125,565

Claims priority, application South Africa, Mar. 1, 1979, 79/0970

Int. Cl.^{3} B07C *5/346*

U.S. Cl. 209—576 **1 Claim**



1. Apparatus for the bulk sorting of particulate ore which comprises:

means defining a passage through which a stream of the ore is continuously moved under the action of gravity;

means for feeding individual batches of particulate ore into said passage defining means, said passage defining means having a downwardly converging shape and being sized to hold a plurality of batches;

detector means adjacent the passage for providing a measure of the radioactive emission intensity of successive transverse bands of the ore in the passage; and

means for sorting the bands of ore on the basis of such measure.

4,361,239

SIZE GRADER FOR POD VEGETABLES

Krishna R. Kumandan, 306A Parkview Dr., Columbus, Wis. 53925

Filed Feb. 4, 1980, Ser. No. 231,180

Int. Cl.^{3} B07C *5/06*

U.S. Cl. 209—626 **18 Claims**

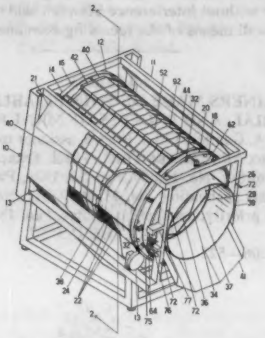
1. A size grader (10) for grading pod vegetables placed therein, comprising:

(a) a substantially cylindrical drum (12, 122), supported in rotatable relation along its longitudinal axis on a frame (11);

(b) banks (38, 136) mounted circumferentially on the drum (12, 122) and having fixed grading vanes (78, 184) extending substantially laterally to the longitudinal axis of the drum (12, 122);

(c) a movable panel (40, 138) oriented outwardly from each bank (38, 136) and mounted on the drum (12, 122), adapted to move independently toward and away from the bank (38, 136), and having panel grading vanes (94, 200) adapted to register with the fixed grading vanes (78, 184) as the panel (40, 138) moves toward the bank (38, 136), the adjacent fixed grading vanes (78, 184) and panel grading vanes (94, 200) defining grading windows (106, 214) therebetween, the grading windows (106, 214) decreasing in size as the panel (40, 138) moves increasingly toward the (38, 136); and

(d) means for selecting and independently changing the position of each panel (40, 138) relative to its associated



bank (38, 136) as the drum (12, 122) rotates, to cause the panel grading vanes (94, 200) to move toward the fixed grading vanes (78, 184) of the bank into a selected grading position to define grading windows (106, 214) of a selected size as the panel (40, 138) passes beneath the drum (12, 122) and to move away from the fixed grading vanes (78, 184) and into a clearing position as the panel (40, 138) passes above the drum (12, 122).

4,361,240

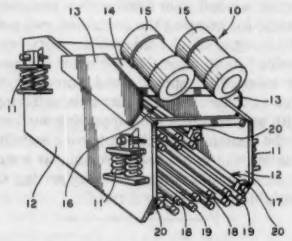
MATERIAL SEPARATING MACHINE

William F. Davis, Massillon, and Masataka Tsutsumi, Canton, both of Ohio, assignors to Midwestern Industries, Inc., Massillon, Ohio

Filed Nov. 21, 1980, Ser. No. 208,860

Int. Cl.^{3} B07B *13/05*

U.S. Cl. 209—674 **6 Claims**



1. Apparatus for separating material comprising a support member, first separating deck means receiving the material to be separated thereon and permitting a preselected size of the material to pass therethrough, second separating deck means positioned below said first separating deck means to receive the material not passing through said first separating deck means and permitting said preselected size of the material to pass therethrough, said first and second separating deck means each including at least two rows of rod members, the rod members of one of said rows being staggered with respect to the rod members of the other of said rows within each said separating deck means, all of said rod members being parallel

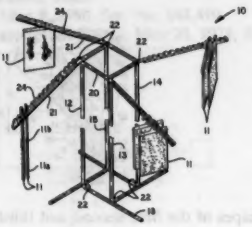
to each other and being carried at one end by said support members, the other end of said rod members being lower than the supported end so that said first and second separating means are downwardly inclined from the point at which the material is received thereon.

4,361,241

HANGER SUPPORT

David C. F. Stoddard, Atlanta, Ga., assignor to Abrams Fixture Corporation, Atlanta, Ga.

Filed Nov. 14, 1979, Ser. No. 94,118
Int. Cl.³ A47F *7/16*
U.S. Cl. 211—123 **4 Claims**



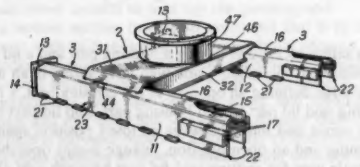
1. In combination, a rectilinear hanger bar oriented in an inclined attitude, an elongated hanger strip mounted on the upper surface of said rectilinear hanger bar for supporting a plurality of hangers for carpet samples and the like from the hanger bar with the hangers each including a hook for extending over the hanger strip and the hanger bar, said hanger strip comprising an elongated molded unitary strip including a plurality of duplicate, equally spaced projections longitudinally aligned along the strip and defining a series of recesses therebetween for receiving the hooks of the hangers, said projections each including parallel front and rear surfaces extending across the length of the strip at an angle other than a right angle with respect to the length of the strip and with the front and rear surfaces of each projection oriented parallel to the front and rear surfaces of adjacent ones of the projections, said recesses between said projections each including a curved hanger support surface extending parallel to the front and rear surfaces of said projections, the projections of said hanger strip being offset from the upper surface of the tubular hanger bar at an angle sufficient to orient the ends of each recess at substantially the same level.

4,361,242

SUPPORTING CHASSIS FOR A WORKING MACHINE SUCH AS A MECHANICAL SHOVEL

Daniel J. Dion, Saint Pathus, and Daniel G. Ranini, Varredes, both of France, assignors to Poclain, Le Plessis-Belleville, France

Filed Sep. 25, 1980, Ser. No. 190,837
Claims priority, application France, Oct. 12, 1979, 79 25490
Int. Cl.³ B66C *23/84*
U.S. Cl. 212—253 **5 Claims**



1. Supporting chassis for a public works machine, such as a hydraulic shovel, consisting of a central frame joined with two side-members, wherein after assembly with the said side members, said central frame constitutes a girder comprising:

a substantially horizontal external lower plate,

a substantially horizontal external upper plate,

two substantially vertical external crossplates, and

in the area of the side-members, two external longitudinal plates, these various plates being joined together as follows:

each external cross-plate to the upper plate, to the lower plate, and to each one of the longitudinal plates,

and in addition, the upper plate and the lower plate are individually joined to each one of the external longitudinal plates,

so as to constitute at least a closed compartment, delimited on the one hand, by the external upper and lower plates, and on the other hand by the two external crossplates,

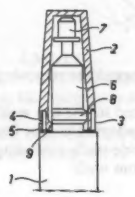
an upper-structure or turret mounted on the central frame for rotation with respect to the chassis, about a substantially vertical axis, by means of a shroud integral with the said central frame, the said shroud being mounted on a shroud support constituted by a sheet of metal extending between the external lower and upper plates of the central frame and which is connected to said plates.

4,361,243

CLOSING MEANS FOR A CONTAINER, TUBE OR THE LIKE

Risto Virtanen, Nurmijarvi, Finland, assignor to Perlos Oy, Nurmijarvi, Finland

Filed May 19, 1981, Ser. No. 265,010
Claims priority, application Finland, May 19, 1980, 801601
Int. Cl.³ A61J *1/00*; B65D *55/02*
U.S. Cl. 215—206 **2 Claims**



1. Closing means (2) for a container (1), for a nozzle fixedly mounted thereon, for a tube or the like, said closing means being openable when turned into a predetermined position which is indicated by indicators (4, 5) provided on closing means (2) and on container (1) and settable diametrally opposite to each other, characterized in that the lower rim of closing means (2) or the upper rim of container (1) is provided with a separate background ring (3) extending at least partly behind indicator (4) of said closing means (2) and indicator (5) of said container (1).

4,361,244

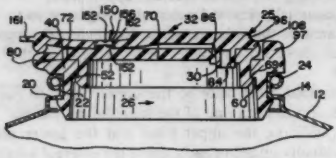
PILFERPROOF CLOSURE

John Walter, Evergreen Park, Ill., assignor to The Continental Group, Inc., Stamford, Conn.

Filed Mar. 11, 1981, Ser. No. 242,757
Int. Cl.³ B65D *39/04*
U.S. Cl. 215—253 **11 Claims**

1. A closure for a container having a wall member with an aperture, said closure comprising a sleeve portion having means for forming a seal-tight fit within a container aperture and having a bore providing a pour opening, a flexible plastic plug having a seal-tight fit within said pour opening, a lift lever connected to said plug, and a combination pour lip and fulcrum projecting from said sleeve portion for fulcruming engagement by said lever upon lifting and tilting of said lever to thereby

open said pour opening by lifting said plug out of said pour opening, a tearable anti-pilfer means on said lever, means connecting said anti-pilfer means to said plug, said anti-pilfer means being torn apart upon lifting of said lift lever.

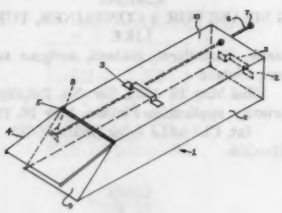


4,361,245

DUSTLESS ASH REMOVER

Hugh T. Allen, P.O. Box 763, and D. Wayne Henson, Rte. #4, both of Canton, N.C. 28716

Filed Feb. 19, 1980, Ser. No. 122,581
Int. Cl.³ B65D *43/26*
U.S. Cl. 220—2 **1 Claim**



1. A receptacle adapted for removing ashes comprising:
a top wall;
a first handle secured to the top wall;
a flat bottom wall adapted to rest flat on a surface;
a pair of opposite side walls extending between the top wall and the flat bottom wall;
a rear wall;
a second handle mounted on said rear wall;
an open front end opposite the rear wall;
a lid pivotally connected to the top wall adjacent the open front end to close the open front end;
the flat bottom wall extending beyond the top wall at the front end to define a lip coplanar with the rest of the flat bottom wall;
the side walls including sloped edges extending between the top wall and the flat bottom wall, and the lid having a length substantially equal to the length of said sloped edges, whereby the lid is biased by gravity against the flat bottom wall when the flat bottom wall rests flat on said surface;
a hole defined in the rear wall adjacent to said second handle; and
an operating rod connected to the lid and extending through the hole in the rear wall for reciprocation therein, whereby the lid may be selectively opened and closed from a location remote from the front end.

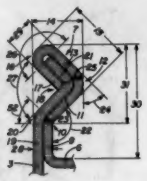
4,361,246

CONTAINER CONSTRUCTION

Alexander Nelson, 606 E. Juneau Ave., Milwaukee, Wis. 53202

Filed Dec. 17, 1980, Ser. No. 217,252
Int. Cl.³ B65D *8/00, 8/18*
U.S. Cl. 220—67 **4 Claims**

1. A container, comprising a container body having an end portion defining an open end of said body, and closure means for closing said body open end, said closure means including a panel having an upright flange at the periphery of said panel which cooperates with the end portion of said body to define a single seam sealingly connecting the container body and panel to close said body open end, said single seam comprising:
a first vertically extending wall portion on the end portion of said container body;
a second wall portion extending upwardly and inwardly from the upper end of said first wall portion;
a third wall portion extending upwardly and outwardly from the upper end of said second wall portion;
first, second and third wall portions on the flange of said panel intimately overlying the inner surface of said body end portion and deformed to correspond respectively to



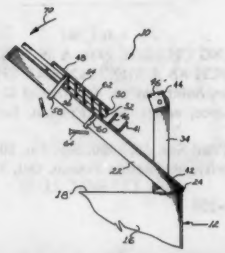
the shapes of the first, second and third wall portions of said body end portion;
a fourth wall portion on the flange of said panel intimately overlying the outer surface of the third wall portion of said body end portion and extending parallel thereto, said fourth wall portion having a terminal surface disposed in abutting relation with the outer surface of the second wall portion of said body end portion; and
an arcuate shoulder interconnecting the upper end of said fourth wall portion with the upper end of the third wall portion of said flange, said shoulder overlying the terminal end of the third wall portion of said body end portion and having an outer extremity lying within a vertical plane defined by the outer surface of the first wall portion of said body end portion.

4,361,247

SELF CLOSING TANK LID

Clarence E. Williams, 5122 N. State Rd. 39, LaPorte, Ind. 46350

Filed Jul. 16, 1981, Ser. No. 283,899
Int. Cl.³ B65D *25/00*
U.S. Cl. 220—88 R **2 Claims**



1. In a safety receptacle having a housing part and a lid part, said housing part including a side wall terminating in an upper marginal edge defining an opening in the housing part, a hinge connecting said lid part to said housing part, said lid part being shiftable about said hinge between a closed position spanning said opening and an open position, linkage means operable by a receptacle user for shifting said lid part between said closed position and said open position, said lid part normally being shiftable from its open position into its closed position by the

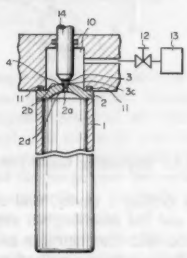
weight of the lid part, the improvement wherein said linkage means includes a linkage member overlying said lid part, a connector carried by said lid part, a heat sensitive actuator means attaching said linkage member to said connector wherein said lid part is shiftable between its open and closed position upon operation of said linkage means, said heat sensitive actuator means for releasing said connector from said linkage member in the presence of a fire when the lid part is held by said linkage means in its open position whereby the lid part can shift into its closed position by its own weight.

4,361,248

METAL CONTAINER

Yuji Soeda, and Akio Goto, both of Hatano, Japan, assignors to Tokico Ltd., Kawasaki, Japan

Filed May 9, 1980, Ser. No. 148,490
Claims priority, application Japan, May 21, 1979, 54-62515
Int. Cl.³ B65D *51/18*
U.S. Cl. 220—254 **3 Claims**



1. A metal container comprising a sheared portion in a part of the wall thereof, a projecting portion formed adjacent to the sheared portion and outwardly projecting from the wall of the container, said projecting portion having a fractured side surface and the dimension of said projecting portion in the direction transverse to the side surface increasing in the direction outwards of the container, and a gas introducing passage defined by the sheared portion and the projecting portion and extending through the wall of the container.

4,361,249

BEVERAGE CONTAINER LID

Richard J. Tuneski, 1035 Franklin Rd., Apt. N-5, Marietta, Ga. 30060, and Robert M. Frisbey, 1200 Marifran Dr., Conyers, Ga. 30207

Filed Feb. 25, 1981, Ser. No. 238,271
Int. Cl.³ A47G *19/22*
U.S. Cl. 220—254 **5 Claims**

1. A lid for beverage container having a top rim portion, comprising:

(a) a cover section which is of a dimension to overlie said top rim section and having an outer periphery, an underside surface and an opening therethrough, said opening being defined by a leading edge, sides which intersect said leading edge and a rear edge;

(b) means on said outer periphery for releasably engaging said cover section to said top rim portion; and

(c) a bottom section having an outer end that is in engagement with said engaging means and being secured to said underside surface adjacent said sides and rear edge, said bottom section normally underlying and being in sealing engagement with said opening along said leading edge, sides and rear edge and including a passage therethrough which is movable between a normally closed position and an open position in flow communication with the interior of said beverage container and said opening, said passage comprising a slit disposed toward said outer periphery of said lid adjacent said leading edge and conforming to the contour of said outer periphery, said bottom section being elastically depressible to move said passage to said open position when force is applied to said bottom section so that said slit is moved out of engagement with said cover

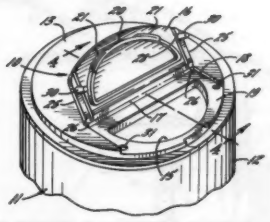
section along said leading edge while said bottom section remains in contact with said underside surface adjacent said sides and rear edge and to cause said passage to return to said closed position when said force is removed therefrom.

4,361,250

PLASTIC CONTAINER CLOSURE

John A. Foster, Rockford, Ill., assignor to J. L. Clark Manufacturing Co., Rockford, Ill.

Filed Jun. 26, 1981, Ser. No. 277,931
Int. Cl.³ B65D *41/32*
U.S. Cl. 220—266 **7 Claims**



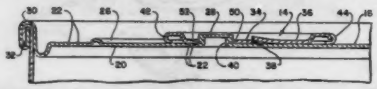
1. A container closure comprising a top panel molded of plastic, a dispensing opening formed through said top panel, a flap molded integrally with and hinged to said panel and swingable upwardly and downwardly relative thereto between open and closed positions with respect to said dispensing opening, an upright hole formed through said panel, an upright plastic pin extending through said hole, means integral with the lower end of said pin and preventing said pin from being pulled upwardly out of said hole, and a tearable web molded integrally with said flap and joined to said pin, said web coacting with said pin to initially hold said flap in said closed position and then tearing when said flap is initially swung upwardly thereby to permit said flap to move to said open position.

4,361,251

DETACHMENT RESISTANT RETAINED LEVER TAB

Neal Langseder, Rolling Meadows, and Friedrich Stein, Wauconda, both of Ill., assignors to American Can Company, Greenwich, Conn.

Filed May 18, 1981, Ser. No. 264,411
Int. Cl.³ B65D *17/34*
U.S. Cl. 220—269 8 Claims



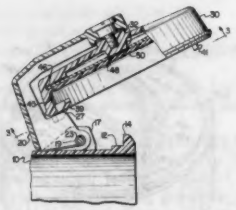
1. An easy open closure for a container comprising:
(a) a central panel wall including a peripheral flange for joining said closure to said container and an integral rivet;
(b) a displaceable panel in said central panel wall disposed outwardly of said rivet and substantially defined by scoring; and
(c) a lever tab with a tab nose and a tab lift and a central web disposed therebetween and wherein said tab web is lanced to form a tongue with said tongue joined to said central panel wall by means of said rivet and wherein a portion of said tongue is coined to a maximum depth on one side of said rivet and wherein other portions of said tongue substantially on the opposite side of said rivet being coining with graduated depth, whereby said tongue is urged to bend more sha ply near said portion of graduated coining than said portion coined to a maximum depth when said tab is pivoted and breakage first occurs along said sharp bend causing thereafter twisting near said maximum coined portion.

4,361,252

FLOATING SEAL FOR WEATHERPROOF HOUSING

Richard I. Black, Closter, N.J.; Alfred L. Ehrenfels, Cheshire, and Michael R. Marks, Trumbull, both of Conn., assignors to Harvey Hubbell Incorporated, Orange, Conn.

Filed Jul. 23, 1981, Ser. No. 286,285
Int. Cl.³ B65D *53/00*
U.S. Cl. 220—344 10 Claims



1. A wiring device comprising a housing with an open, generally circular mouth, and a cover assembly therefor, the cover assembly including a cover and a hinge arm pivotally attached to an exterior portion of the housing and to the cover so that the cover is rotatable relative to the arm and pivotable between open and closed positions with respect to the mouth of the housing, the improvement comprising:
a generally circular and relatively thin, stiff disk;
means on the inner surface of said cover for receiving peripheral portions of said disk to loosely retain said disk in generally parallel relationship with said cover with one major surface of said disk facing said cover and the other major surface thereof exposed when the cover is pivoted to the open position; and
an elastomeric generally circular body adhered to said exposed major surface, said body being positioned and dimensioned to engage the mouth of said housing when the cover is pivoted to its closed position so that, when said cover is closed and rotated, said elastomeric body can frictionally engage said mouth and remain substantially in position while said cover rotates relative thereto.

4,361,253

LIQUID TRANSFER DEVICE

William E. Flynn, Chelmsford, and Charles F. Mountain, Cambridge, both of Mass., assignors to Instrumentation Laboratory Inc., Lexington, Mass.

Filed Aug. 4, 1980, Ser. No. 175,068
Int. Cl.³ B67D *5/54*
U.S. Cl. 222—162 9 Claims

6. A device for dispensing liquid from an ampul or the like comprising
a body that defines a cavity, said cavity having an open entrance end for receiving an ampul and a closed end spaced from said open entrance end,
structure defining a dispensing port and a passage providing fluid communication between said dispensing port and said cavity,
an annular seal in said cavity for sealing engagement with an ampul as the ampul is telescopically inserted into said cavity,
an inlet tube secured in said cavity and having an inlet end located adjacent the open end of said cavity and an outlet end secured at the closed end of said cavity in fluid communication with said passage, said inlet tube extending towards the open end of said cavity with its inlet end located between said annular seal and said entrance end of said cavity,
said annular seal arranged for cooperation with an ampul inserted into said cavity to permit further axial movement of said ampul into said cavity when said ampul is in sealing engagement with said annular seal and the inlet end of said tube is submerged in liquid in the ampul so that said further axial movement of said ampul into said cavity creates a piston action which compresses air trapped in said cavity and forces liquid from said ampul through said inlet tube, said passage and said dispensing port in a dispensing action.

4,361,254

HOPPER FOR STORING FREE FLOWING SOLID MATERIAL

Hiroshi Teraoku, and Hideki Yamaguchi, both of Tokyo, Japan, assignors to Hitachi Ltd., Tokyo and Ohbayashi-Gumi, Ltd., Osaka, both of, Japan

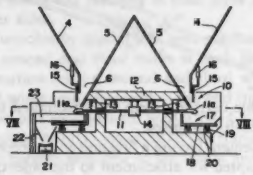
Filed Nov. 19, 1980, Ser. No. 208,479
Claims priority, application Japan, Nov. 21, 1979, 54-150050; Feb. 14, 1980, 55-16994
Int. Cl.³ B65G *65/48*
U.S. Cl. 222—196 7 Claims

1. A hopper apparatus for the storage and controlled discharge of free-flowing solid material, said apparatus comprising:
a peripheral side wall having an inverted frustoconical configuration with upper and lower open ends;

a conical body positioned within said peripheral side wall and defining therewith an annular space for storage of free-flowing solid material, said conical body having a lower end;

one of said lower ends of said peripheral side wall and said conical body extending downwardly below the other of said lower ends and defining an inclined downward extension;

said lower ends of said peripheral side wall and said conical body defining therebetween an annular discharge port for discharging solid material from said annular space toward



said extension, such that the discharged solid material flows in an inclined path along said extension;

means for controlling the amount of said solid material to be discharged through said discharge port, said controlling means including an annular gate member mounted annularly adjacent said discharge port for vertical movement upwardly and downwardly to relatively open and close said discharge port, respectively; and

means for conveying solid material discharged from said discharge port, said conveying means including an annular table mounted for rotation below said discharge port.

4,361,255

ACCUMULATOR TYPE MANUAL ATOMIZER

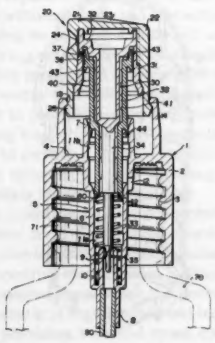
Tadao Saito; Takao Kishi, and Yoshiyuki Kakuta, all of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 134,186, Mar. 26, 1980, abandoned. This application Feb. 10, 1982, Ser. No. 347,498

Claims priority, application Japan, Mar. 27, 1979, 54-35994; May 16, 1979, 54-66090

Int. Cl.³ B65D *47/34*

U.S. Cl. 222—321 **7 Claims**



1. A liquid spraying device, comprising:

a container having a neck portion;

an atomizer body having a peripheral portion engaged with the neck portion of said container, a radially inwardly extending flange-like upper wall connected to the upper end of the engaging peripheral portion and a main cylindrical portion attached to said upper wall, having a small-diameter, hollow, lower cylindrical portion;

an atomizer head having a nozzle outlet preforated in said atomizer head, said head being slidable with respect to said atomizer body;

an engaging member having a large-diameter cylindrical portion which is held by said atomizer head, and having a rod portion downwardly extending from said large-diameter cylindrical portion, having a rod-lke valve body extending downwardly from said rod portion, said valve body being slidably inserted into the small diameter cylindrical portion of said atomizer bodies;

a piston member having a tubular portion which slidably engages the rod portion of said engaging member and which has a skirt-like small-diameter piston formed at the lower end of said piston member which is surrounded by the lower, small-diameter cylindrical portion of said atomizer body, and which has a skirt-like, large-diameter piston at the upper end of said piston member which is surrounded by the upper, large-diameter portion of said engaging member;

a suction tube which cooperates with the lower portion of the lower small-diameter, hollow cylindrical portion of said atomizer body for intaking liquid from said container; and

spring means for upwardly urging said piston member, said engaging member and said atomizer head;

said atomizer body being provided with a suction valve hole at the inside bottom of the small-diameter cylindrical portion of said atomizer body, said engaging member having a nozzle opening formed in the large-diameter cylindrical portion of said engaging member in fluid communication with said nozzle outlet of said atomizer head, being normally closed by the large-diameter of said piston member; a liquid passage being defined between the outer surface of said engaging member and the inner surface of said piston member for communicating liquid from said container to said nozzle outlet of said atomizer head.

4,361,256

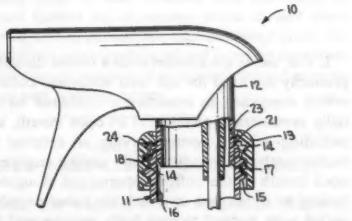
DISPENSER HAVING ATTACHED AND SEALED CLOSURE CAP

Douglas F. Corsette, 6559 Firebrand St., Los Angeles, Calif. 90045

Filed Jul. 1, 1980, Ser. No. 165,082

Int. Cl.³ B67D *5/40*

U.S. Cl. 222—383 **8 Claims**



1. In an assembly including a dispenser having a continuous cylindrical connecting portion, a closure cap in engagement with said connecting portion, said cap threadedly engaging the neck of a container of fluid to be dispensed, the improvement wherein interengaging means are provided on said cap and on said portion for positively retaining said dispenser and said closure cap together in a fluid tight manner, said means solely comprising an annular flange on said connecting portion and a flexible conical skirt on said cap, said flange including an upper wall extending radially outwardly, said skirt extending toward said wall and positively engaging the inner terminal end of said

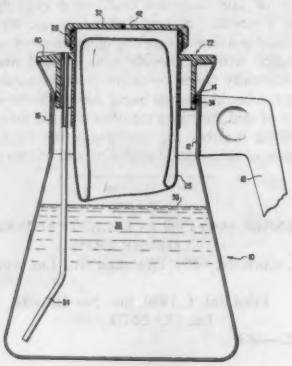
flange, and said container neck underlying said skirt, whereby said interengaging means defines a snap-fit engagement between said cap and said connecting portion incapable of disassembly upon threaded engagement between said cap and said neck, and whereby, upon a tightening of the closure cap on the container neck, positive engagement between said conical skirt and said inner terminal end of said flange is improved as the free end of the skirt moves radially inwardly into the root end of the flange in response to said tightening action of the cap and fluid-tight seals are defined between said cap and said portion and between said cap and said container neck.

4,361,257

APPARATUS FOR REDUCING OXIDATION OF COFFEE

Wayne B. Stone, Jr., Bethesda, Md., assignor to Wood Manufacturing Co., Inc., Flippin, Ark.

Filed Dec. 23, 1980, Ser. No. 219,461
Int. Cl.³ A47G *19/14*
U.S. Cl. 222—464 **6 Claims**



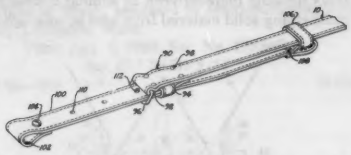
1. For use in association with a coffee decanter of the type primarily intended for use with automatic coffee makers, and which comprises an imperforate container having a substantially symmetrical profile and an open mouth, a top assembly including a body portion having an external periphery for mating with and in substantially sealing engagement with the open mouth of the coffee decanter, an elongated pour spout having an upper end in which the outer periphery thereof is sealed with respect to said body portion and for which the inner diameter of the upper end thereof opens through said body portion to the side thereof exterior of the coffee decanter; and a lower end extendant within the coffee decanter to and opening adjacent the bottom thereof, a substantially central bore opening therethrough, and an imperforate flexible follower as an adjunct of and opening through said central bore and sealing said central bore with respect to the interior of the coffee decanter, said flexible follower being dependent from said top assembly to within said coffee decanter and of a dimension for engagement with the upper surface of coffee within the coffee decanter and for following the descending level of coffee within the decanter as the same is poured therefrom through said pour spout.

4,361,258

ADJUSTABLE CARRYING STRAP

Leebert D. Clark, Yoakum, Tex., assignor to Torel, Inc., Yoakum, Tex.

Filed Jan. 19, 1981, Ser. No. 226,027
Int. Cl.³ F41C *33/00*
U.S. Cl. 224—150 **5 Claims**



1. An adjustable carrying strap for attachment to an object to be carried which comprises:

a main strap element having a first end and a second end, said first end adapted for attachment to the object;

an adjustment strap element having a first end and a second and, said second end of the adjustment strap adapted for attachment to the object;

a locking ring rotatably connected to the second end of said main strap and adapted for receiving and selectively engaging said adjustment strap element, said locking ring having an effective clearance passage in the cocked position substantially equal to the thickness of said adjustment strap element; and

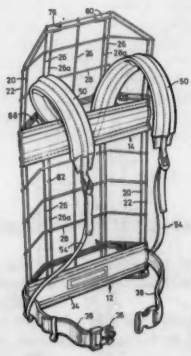
means on the main strap element responsive to a force on the main strap element for automatically locking the main strap to the adjustment strap element.

4,361,259

WIRE BACK PACK FRAME

Alan B. Chanter, Oakville, Canada, assignor to Pathfinder Camping Products Limited, Oakville, Canada

Continuation-in-part of Ser. No. 94,146, Nov. 14, 1979, abandoned. This application Jan. 21, 1981, Ser. No. 226,964
Claims priority, application Canada, Jul. 18, 1979, 332047
Int. Cl.³ A45F *3/10*
U.S. Cl. 224—211 **11 Claims**



1. A back pack frame comprising:

(a) a frame member having a frame perimeter member, the said frame perimeter member having two generally vertical sides and two generally horizontal sides connecting the said vertical sides, said vertical perimeter member sides each being constituted by two closely spaced parallel

respective portions of first solid wire providing corresponding slot portions between them, and said horizontal perimeter member sides each also being constituted by respective portions of first solid wires,

(b) a wire frame grid extending between the said frame perimeter member sides and connected thereto, the wire frame grid comprising:

a plurality of spaced second solid wires extending between the perimeter member sides and fastened at their ends to the perimeter member sides, and

a plurality of spaced third solid wires extending between the perimeter member sides transverse to the plurality of second wires and fastened at their ends to the perimeter member sides,

the said two closely spaced first wire portions being fastened to the second and third wires at each junction of a first wire portion with a second and third wire and the said second wires being fastened to the said third wires at each junction of a second wire with a third wire,

(c) a shoulder harness attached to the frame member, and

(d) a belt harness attached to the frame member.

4,361,260

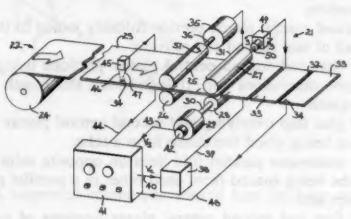
WEB REGISTRATION CONTROL

Marc A. Hanlan, 1501 S. Mason St., Appleton, Wis. 54911

Filed Jun. 27, 1980, Ser. No. 163,569

Int. Cl.³ B65H *23/18*; G06F *15/46*

U.S. Cl. 226—30 **15 Claims**



1. A register control for web handling apparatus having drive motive means operatively moving a web containing repetitive indicia and a sequentially operating function apparatus performing repetitive operations on said web corresponding to said repetitive indicia and corrective motive means positively rotating an associated drive roll which engages and moves said web in a predetermined relationship with respect to said drive motive means, said register control comprising

first sensing means operatively connected to said drive motive means to provide a speed responsive signal,

second sensing means operatively connected to said function apparatus to provide a function indicating signal,

third sensing means operatively scanning said web to provide an indicia indicating signal, and

modification means operatively connected to said first, second and third sensing means and operable between a first condition providing a first speed command signal to operate said corrective motive means in direct response to said speed responsive signal when the operation of said function apparatus is in register with said indicia and a second condition providing a second speed command signal responsive to said speed responsive signal modified in response to said function indicating signal and said indicia indicating signal to operate said corrective motive means when the operation of said function apparatus is out of register with said indicia to thereby vary the operating speed of said corrective motive means to regain registration between said function apparatus and said indicia.

4,361,261

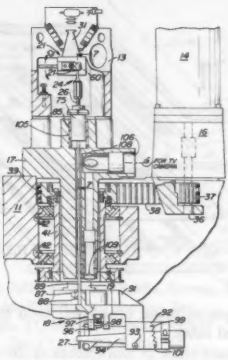
APPARATUS FOR WIRE BONDING

Richard J. Elles, Philadelphia; Frederick W. Kulicke, Jr.; Moshe E. Sade, both of Horsham, and Albert Soffa, Wynnewood, all of Pa., assignors to Kulicke & Soffa Industries, Inc., Horsham, Pa.

Division of Ser. No. 963,167, Nov. 22, 1978, Pat. No. 4,239,144. This application Aug. 15, 1980, Ser. No. 178,368

Int. Cl.³ H01L *21/607*; B23K *37/02*

U.S. Cl. 228—103 **3 Claims**



1. A method of aligning the working face of a bonding tool with a bonding target of a substrate located on a X-Y table for movement perpendicular to the axis of rotation of a rotatable bonding head comprising the steps of:

mounting said bonding tool on said rotatable bonding head having the working face of the bonding tool oriented near the axis of rotation of said head,

rotating said bonding tool to at least three distinct rotational positions,

marking the position of said working face on said bonding tool by engaging said bonding tool with a substrate at said distinct rotational positions,

calculating the error displacement of said working face of said bonding tool from the true center of rotation of said hollow cylindrical sleeve, and

positioning said X-Y table by an amount sufficient to locate said bonding target of said substrate with said center of rotation and further by an amount equal to said error displacement to compensate for the calculated error displacement of the working face of said bonding tool from the actual center of rotation of said bonding head prior to bonding on said bonding target.

4,361,262

METHOD OF MAKING EXPANDED SANDWICH STRUCTURES

Leonardo Israeli, Los Angeles, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 12, 1980, Ser. No. 158,845

Int. Cl.³ B23K *20/18*

U.S. Cl. 228—118 **11 Claims**

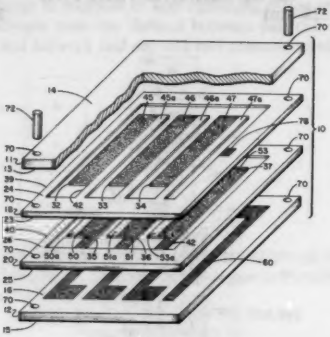
1. A method of making sandwich structures from a plurality of workpieces comprising:

providing at least four workpieces, each of said workpieces having two opposed principal surfaces, at least two of said workpieces being core workpieces, said core workpieces being substantially identical, said core workpieces having portions thereof cutout such that a plurality of parallel strips and a frame portion are defined, said strips being surrounded by said frame portion, said strips being spaced from each other by said cutout portions, said strips being

connected to said frame portion, said strips having two longitudinal edges and two lateral edges;

treating selected areas of said workpieces to inhibit joining at said areas;

positioning said workpieces in a stack contacting at their principal surfaces such that there are two outer workpieces which sandwich said core workpieces, said core



workpieces being positioned such that said strips are in aligned rows;

joining said stack of workpieces at the untreated areas with said strips being joined in respective rows and to the outer sheets along alternate longitudinal edges; and

expanding the joined stack such that said strips form substantially vertically at the treated areas thereof.

4,361,263

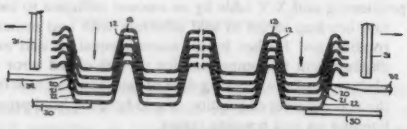
EGG TRAY

Leslie P. Thomas, Canton, Mich., assignor to Diamond International Corporation, New York, N.Y.

Filed Aug. 28, 1980, Ser. No. 181,975

Int. Cl.³ B65D *1/00*

U.S. Cl. 229—2.5 EC **4 Claims**



1. A plastic egg tray comprising a substantially flat sheet of material defined by a peripheral rim having parallel sides and including a plurality of alternate rows of pockets and posts extending from the plane of said sheet, said alternate rows of pockets extending downwardly from the plane of said sheet and said alternate rows of posts extending upwardly from the plane of said sheet, a row of downwardly extending pockets adjacent each of said parallel sides of said peripheral rim including inclined said wall members depending inwardly from said rim, and at least a pair of ledge members included in said inclined wall of a plurality of said pockets on each of said parallel sides and which includes a surface thereof suitable to be engaged by a denesting finger during removal of an individual tray from the bottom of a stack of similar trays, said ledge members being disposed closely adjacent one another on the approximate centerline of the inclined wall thereof to insure engagement of one of said ledge members with said denesting finger.

4,361,264

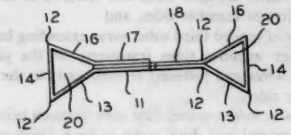
PARTITION STRUCTURE

Nicholas A. Philips, Glendale Heights, Ill., assignor to Container Corporation of America, Chicago, Ill.

Filed Apr. 27, 1981, Ser. No. 257,535

Int. Cl.³ B65D *5/48*

U.S. Cl. 229—15 **4 Claims**



1. A partition structure adapted for use in dividing a container into compartments, said partition structure being formed from a blank of paperboard and comprising:

a first central planar portion;

a first end portion formed of three congruent segments joined in series on transverse parallel fold lines, one end of said first end portion being connected to one end of said first central planar portion;

a second end portion formed of three congruent segments joined in series on transverse parallel fold lines, one end of said second end portion being connected to the other end of said first central planar portion;

a glue flap foldably joined to the other end of said first end portion;

a second central planar portion foldably joined to the other end of said second end portion;

said first and second central planar portions being of the same dimensions and at least twice the length of said segment;

said glue flap overlying said second central planar portion and being glued thereto to form a tube;

said transverse parallel fold lines on opposite sides of said tube being spaced from each other in a parallel relationship; and

said first and second central planar portions of said tube being movable in contacting engagement and providing said first and second end portions to extend transversely from the planes of said planar portions.

4,361,265

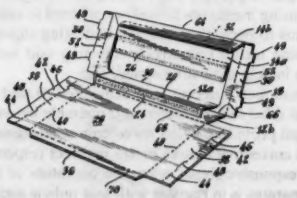
REVERSE FOLD LOCK DISPLAY TRAY

Albert A. Benham, Granville, Mass., assignor to Champion International Corporation, Stamford, Conn.

Filed Jun. 24, 1981, Ser. No. 276,786

Int. Cl.³ B65D *1/40, 5/44, 5/22*

U.S. Cl. 229—16 R **6 Claims**



1. A display tray comprising:

a top panel having an opening formed therein,

a bottom panel of shorter length than said top panel and spaced from and parallel to said top panel,

a side panel extending between outer parallel side edges of the top and bottom panels,

a second side panel pivotally connected to the side edges

defined said opening formed in said top panel and connected to said bottom panel, each of said second side panels being spaced from and parallel to adjacent first side panels,

an end closure panel between substantially parallel end edges of said top and bottom panels, each of said end closures including

a first end closure panel hingedly connected to said top panel,

a second end closure panel hingedly connected to said bottom panel, said first end closure panel is in underlying relationship and substantially parallel to said top panel, and said end closure panel includes a first portion substantially perpendicular to said bottom panel and a second portion parallel to said top panel between said first end closure panel and said top panel, and

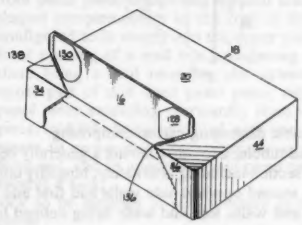
means for releasably locking said first and second end closure panels together.

4,361,266

COATED PAPERBOARD FOOD PACKAGE

Earl J. Killy, Monroe, La., assignor to Manville Service Corporation, Denver, Colo.

Filed May 13, 1981, Ser. No. 262,884
Int. Cl.³ B65D *5/26, 43/02*
U.S. Cl. 229—32 **3 Claims**



3. An improved coated paperboard food package comprising:

(a) a coated paperboard tray comprising:

(1) a bottom panel;

(2) a plurality of oppositely spaced side panels hingedly attached to the bottom panel;

(3) corner gusset panels hingedly attached to the side panels at each corner of the tray;

a. each corner gusset panel comprising:

[1] a full gusset hingedly attached to one of the side panels at each corner;

[2] a half gusset hingedly attached to adjacent side panels at each corner, the full and half gusset also being hingedly attached to each other along a diagonal scoreline; and

[3] a removable tray glue tab hingedly attached to each full gusset along an extension of the diagonal scoreline;

(b) an improved coated paperboard lid comprising:

(1) a top panel;

(2) a plurality of oppositely spaced side panels hingedly attached to the top panel;

(3) a pair of lid glue tabs hingedly attached to opposite ends of opposite side panels for gluing adjacent side panels together whenever the lid is erected; and

(4) a pair of oppositely spaced cut-score lines formed in opposite side panels and forming a tear-out portion and two non-tear-out portions in at least two oppositely spaced side panels, the two non-tear-out portions being formed adjacent to the glue tabs hingedly attached to the opposite ends of opposite side panels; the cut-score lines being positioned in such a manner that the tear-out portions are positioned over the removable tray glue tabs formed on the paperboard tray positioned within the paperboard lid; and

(c) first adhesive means formed on the lid glue tabs for adhesively securing the lid side panels into an erected lid;

(d) second adhesive means formed on each full gusset on one side of the paperboard tray for adhesively securing the full gusset to an oppositely positioned side panel; and

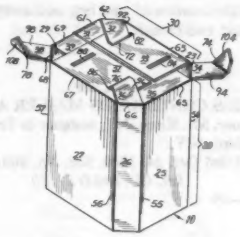
(e) third adhesive means, formed on each tray glue tabs on the other side of the paperboard tray for adhesively securing the tray to the lid whenever the lid is positioned over the tray after the tray has been filled.

4,361,267

FOUR-CORNER DESIGN FOR OCTAGONAL CONTAINER

Roger M. Wozniacki, 3218 Flaming Candle, Spring, Tex. 77373, assignor to Roger M. Wozniacki, Spring, Tex.

Filed Feb. 11, 1981, Ser. No. 233,537
Int. Cl.³ B65D *5/10*
U.S. Cl. 229—39 R **13 Claims**



1. An octagonal container comprising a body section and a closure section;

the body section comprising a pair of major wall panels, a pair of minor wall panels, and four corner wall panels, the major and minor wall panels being foldably connected in alternating series by the corner wall panels;

the closure section comprising a pair of major cover flaps, a pair of minor cover flaps, and four corner flaps;

each of the major cover flaps comprising a pair of vertical slots, and the four corner flaps comprising a pair of right polygonal corner flaps and a pair of left polygonal corner flaps, each of the right polygonal corner flaps being divided by a right diagonal score line into an extension arm and an engagement flap, each of the left polygonal corner flaps being divided by a left diagonal score line into an extension arm and an engagement flap,

each of the minor cover flaps being foldably connected to and folded inward at right angles to a minor wall panel, each of the major cover flaps being foldably connected to and folded inward at right angles to a major wall panel in externally overlapping relation to the minor cover flap, each of the corner flaps being foldably connected to and folded inward at right angles to a corner wall panel,

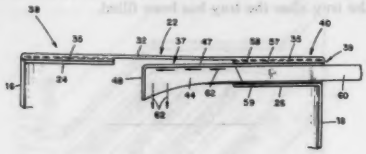
and each of the corner flaps being secured in externally overlapping relation to the adjacent major cover flap by inserting the engagement flap into one of the vertical slots.

4,361,268

SLEEVE CONSTRUCTION FOR A BAG HAVING A FILLING OPENING

Dennis F. Sexton, and Richard J. Hadaskay, both of Camden, Ark., assignors to International Paper Company, New York, N.Y.

Filed Mar. 19, 1981, Ser. No. 245,313
Int. Cl.³ B65D *30/24*
U.S. Cl. 229—62.5 **2 Claims**



1. In a bag having an end closure with a filling passageway at one end thereof, the improvement which comprises:

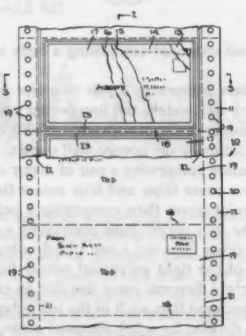
providing a deflecting member at the end of said filling passageway, said deflecting member including a section extending inwardly into said bag from the inner end of said filling passageway, said section including an inwardly extending panel having folded under flaps along its marginal edges, and the innermost end of said section being folded back upon itself, whereby when material is directed through said filling passageway it impinges on said folded end of said section to cause it and said marginal edge folded under flaps to assume a position to direct the material into the interior of said bag and away from the other end of said end closure.

4,361,269

TENTLESS CONTINUOUS MAILER ASSEMBLY

Frank Neubauer, Mt. Kisco, NY, assignor to Transkrit Corporation, Elmsford, N.Y.

Filed Oct. 24, 1980, Ser. No. 200,405
Int. Cl.³ B65D *21/10*
U.S. Cl. 229—69 **11 Claims**



1. In a continuous mailer assembly, the combination comprising

a first ply having a plurality of transverse lines of weakening to define a series of envelope fronts;

a second ply having a plurality of transverse lines of weakening to define a series of envelope backs; and

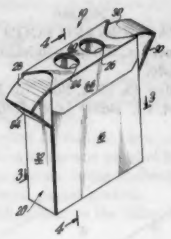
at least one line of hot melt pressure sensitive adhesive between said plies and securing said plies together, said adhesive being characterized in that after its open time has ended, said adhesive remains very tacky and is capable of adhering to another ply of paper at any time that the paper makes contact with said adhesive.

4,361,270

DOUBLE CELL, DOUBLE SLIDE DISPENSING CARTON AND CARTON BLANK FOR FORMING SAME

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Jun. 24, 1981, Ser. No. 276,797
Int. Cl.³ B65D *5/72*
U.S. Cl. 229—17 SC **9 Claims**



1. A reclosable dispensing carton comprising:

an elongated tubular enclosure having a generally rectangular cross section including alternately, hingedly connected first and second opposed side walls and first and second opposed end walls, said end walls being defined by inner and outer coplanar panels;

a partition panel extending from said first side wall to said second side wall thereby dividing said carton into two discrete elongated tubular compartments;

a bottom closure sealing one end of said carton; and

a top closure structure sealing the opposed end of said carton, said top closure structure including:

a first cover flap hingedly connected to the first side wall and disposed perpendicular thereto so as to cover the upper end of each said compartment, said first flap having a pair of spaced apertures, each of which is aligned with one of said compartments;

a second cover flap hingedly connected to said second side wall and including first and second hingedly connected sections,

said first section being coplanar with and overlying said first cover flap and having a pair of apertures disposed in register with said apertures of said first flap, and with said second section of said second cover flap overlying and being adhesively bonded to said first wall; and

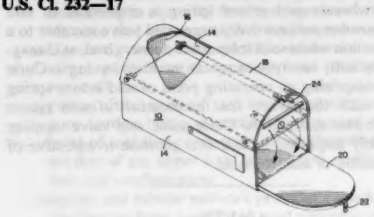
a pair of closure tabs respectively hingedly connected to a flap portion of the outer panel of each said end wall, each said closure tab being slidably interposed between said first and second cover flaps and being of a length sufficient to cover the adjacent aperture in said first cover flap, said flap portion of each said outer panel being pivotally connected to the remaining portion of the outer panel of the end wall,

whereby, the closure tabs may be independently slidably displaced outwardly to uncover the respective registered apertures so as to enable the contents within the compartments to be dispensed either from one compartment alone or from both compartments simultaneously.

4,361,271
MAIL BOX CONVERSION KIT

Jay L. Hester, 3459 Rainey Ave., Hapeville, Ga. 30354, and Irving P. Banks, 12635 Zimmer Dr., NE., Atlanta, Ga. 30306

Filed Aug. 29, 1980, Ser. No. 182,523
Int. Cl.³ A47G 29/12
U.S. Cl. 232—17 2 Claims



1. A kit for converting a traditional rural mail box into a mail box divided into two separate compartments, one of which is secured by a lock for the reception of valuable mail and into which mail may be placed through a slot and the other of which is open in the usual way, which comprises:

a front panel piece comprising a metal plate having a top shaped complementary to the roof of the mail box and configured to fit snugly into the upper roof portion of the front opening of a mail box, and having a straight base, there being a mail receiving slot extending across the upper part of said front panel piece, tabs on said front panel piece extending rearwardly from said front panel piece, said tabs being provided with apertures to receive means to secure said panel piece to said mail box at its front end, and an aperture in said panel piece provided to receive a lock;

a lock to be installed in said aperture in said front panel piece;

means to secure the tabs on said front panel piece to the roof of said mail box;

a tray which constitutes the floor of the secured compartment and which is disposed horizontally in said mail box and which extends from a location adjacent to the bottom of said front panel piece, to the rear wall of said mail box, said tray having upstanding sides which extend lengthwise of said tray, there being a flange at the front end of said tray;

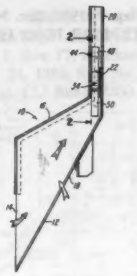
a U-shaped bracket adapted to be secured to the back of the mail box and having wings for attachment of said tray to said mail box and a bolt passing through the bracket wings and the upstanding sides of the tray in a manner which permits the tray to be pivoted about the axis of the bolt so as to permit said secured compartment to be emptied of its contents.

4,361,272
THERMAL DAMPER FOR RECTANGULAR FLUE

John Prikkel, III, Dayton; Dale R. Booher, and Jeffrey R. Killin, both of Fairborn, all of Ohio, assignors to Energy Vent, Inc., Dayton, Ohio

Filed Apr. 6, 1981, Ser. No. 251,213
Int. Cl.³ F23N 3/00
U.S. Cl. 236—1 G 7 Claims

1. A damper assembly for operation between confronting side faces of a flue comprising, in combination, a vane disposed between said side faces and having a width substantially equal to the separation between said side faces, axle means generally perpendicular to said side faces and projecting through the space between said side faces, bimetallic coil means convoluted about said axle means, and means cooperating with said axle means to retain the innermost convolution of said coil means against rotation about said axle means, means affixing said vane to the outermost convolution of said coil means, said vane having first and second wing portions projecting outwardly and oppositely from said coil means, said wing portions disposed generally radially with respect to said axle means and

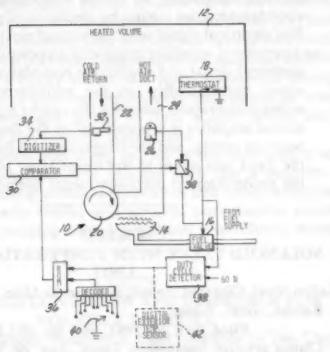


orbited about said axle means in response to changing temperatures of said coil means causing the outermost convolution of said coil means to progress circumferentially about the innermost convolution of said coil means.

4,361,273
ELECTRONIC HUMIDITY CONTROL

Michael R. Levine, 2900 Heatherway, Ann Arbor, Mich. 48104, and Allen M. Krass, 1318 E. Indian Mound, Birmingham, Mich. 48010

Filed Feb. 25, 1981, Ser. No. 238,171
Int. Cl.³ F24D 5/10; F23N 3/00
U.S. Cl. 236—11 19 Claims



1. A control system for a device for modifying the humidity of a contained air volume, the volume having its temperature controlled by an intermittently operative temperature modifying apparatus, comprising:

means for generating a first electrical signal having a value which is a function of the duty cycle of the temperature modifying apparatus;

means for receiving the first electrical signal and generating a signal representation of the desired relative humidity within the volume;

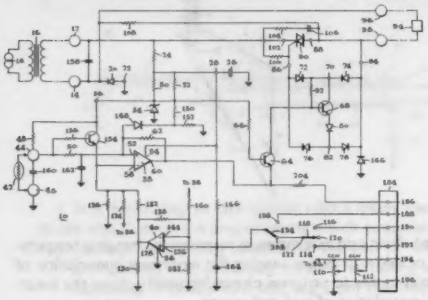
means for generating a signal representative of the actual relative humidity within the contained air volume; and

comparator means operative to receive the signal representative of the desired relative humidity within the volume and the signal representative of actual relative humidity within the volume and to control the operation of the device to maintain the actual relative humidity substantially equal to the desired relative humidity.

4,361,274
ELECTRONIC TEMPERATURE CONTROL

William F. Raleigh, Valencia, and Patrick J. Keegan, Sepulveda, both of Calif., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Sep. 8, 1980, Ser. No. 184,638
Int. Cl.³ F22B 37/42; H05B 1/02
U.S. Cl. 236—21 B 2 Claims



1. An electronic temperature control for use with swimming pool and spa water heaters comprising:

means for sensing the temperature of the water to be heated, including a thermistor;

means for generating a first electrical signal proportional to the sensed temperature;

means for generating a second electrical signal which increases in proportion to a decrease in a desired water temperature setting;

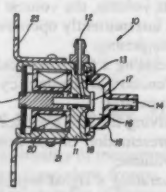
means for comparing the sensed temperature with the desired temperature setting by electronically comparing the first electrical signal with the second electrical signal; and

an operational amplifier positively responsive to the second electrical signal and negatively responsive to a fixed bias signal corresponding to the predetermined maximum water temperature, whereby the output signal of the operational amplifier is proportional to the desired water temperature setting, and the output signal is further limited by the fixed bias signal to the signal lever corresponding to the predetermined maximum water temperature.

4,361,275
SOLENOID VALVE WITH TEMPERATURE SAFETY UNIT

Kojiro Mori, Okazaki, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Aug. 28, 1981, Ser. No. 297,192
Claims priority, application Japan, Aug. 29, 1980, 55-120100
Int. Cl.³ G05D 23/26
U.S. Cl. 236—88 5 Claims



1. A solenoid valve with a temperature safety unit comprising:

a body having a fluid passage;

a solenoid mounted in said body;

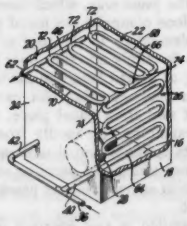
a valve member operatively associated with said body for displacement to open or close said fluid passage in response to a magnetic field as said solenoid is energized and deenergized; and

return spring means operatively associated with said body and which comprises a magnetically soft, amorphous metal member disposed in a path of flux from said solenoid within a region the temperature of which is to be determined wherein said return spring is connected to said valve member and normally urges said valve member to a first position when said solenoid is deenergized, said magnetically soft, amorphous metal member having a Curie point comprising an operating point of said return spring means such that when the temperature of said return spring means exceeds the Curie point, said valve member is forcibly displaced to said first position irrespective of energization of said solenoid.

4,361,276
HEATING SYSTEM HAVING SUPPLEMENTAL COIL ARRANGEMENT

Edward Paige, 2525 Fifth Ave., East Meadow, N.Y. 11554

Filed May 14, 1981, Ser. No. 263,769
Int. Cl.³ F24D 3/00
U.S. Cl. 237—56 1 Claim



1. In a heating system comprising a furnace having a combustion chamber provided with a burner therein for producing heat, said combustion chamber including top and bottom walls and four sidewalls with said burner disposed on said bottom wall, a fluid heating chamber in which a fluid is heated by said heat to define a boiler, supply pipe means coupled to said fluid heating chamber for supplying heated fluid for heating an area, and return pipe means coupled to said heating chamber for returning a cooled fluid to said fluid heating chamber, an improvement comprising:

a tubular network disposed in said combustion chamber around said burner;

means connecting said tubular network between said supply and said return pipe means for providing supplemental heating of a portion of the fluid within said tubular network, said tubular network providing a fluid flow for said portion of the fluid in a parallel flow relationship with the heated fluid flow through said fluid heating chamber;

said tubular network comprising a serpentine coil arrangement including first and second continuous serpentine coil configurations;

said first continuous serpentine coil configuration being provided with a right angle arrangement so as to span across two adjacent sidewalls of said combustion chamber, said first continuous serpentine coil configuration commencing at a low level and weaving upward across said adjacent sidewalls toward an upper level, said return pipe means being coupled to said first continuous serpentine coil configuration at said low level and said supply pipe means being coupled at said upper level;

said second continuous serpentine coil configuration having a first continuous serpentine coil section commencing at the low level and weaving across a third sidewall of said combustion chamber to the upper level, and a second

continuous serpentine coil section integrally coupled to the upper level of said first continuous serpentine coil section and weaving across said top wall of said combustion chamber to interconnect to said supply pipe means, said low level of said first continuous serpentine coil section being coupled to said return pipe means;

said first and second continuous serpentine pipe configurations being in a parallel flow arrangement with each other between said return and said supply pipe means;

said second continuous serpentine coil section weaving from a back position to an opposing front position across said top wall; and

opposing distal ends of said second continuous serpentine core section being respectively supported on the upper level of said first continuous serpentine coil section and a portion of the upper level of said first continuous serpentine coil configuration;

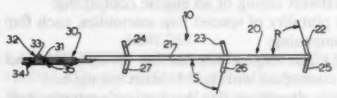
whereby said tubular network provides a quicker start-up of the furnace from a cold start, and also provides additional heat to the system.

4,361,277

PORTABLE VEHICLE TRACTION DEVICE

Robert W. Cannady, 4613 Greentree Rd., Wilmington, N.C. 28407, and Robert E. Hale, 126 E. Brandywine, Wilmington, N.C. 28405

Filed Apr. 6, 1981, Ser. No. 251,083
Int. Cl.³ E01B *23/00*
U.S. Cl. 238—14 **1 Claim**



1. A traction device for assisting in the extrication of a vehicle wheel stuck in sand, snow, bog or the like, comprising:

(a) a traction plate assembly, comprising:

(i) a rigid, rectangular metal plate providing a base member; and

(ii) a plurality of pairs of top and bottom rib members formed of rigid metal strips with the top and bottom members of each pair being in aligned opposing positions and securely welded to the respective top and bottom surfaces of said base member in transverse, longitudinally spaced positions with each rib member being angled forwardly and having a length substantially equal to the width of said base member, one pair of said rib members being located proximate the trailing edge of said plate and the forwardmost pair of said rib members being spaced inwardly from the leading edge of said plate; and

(b) a traction chain-bar structure appended to and providing a continuation of the traction structure provided by said traction plate assembly, comprising:

(i) a pair of metal chains of equal length and formed of loosely interconnecting links with one end of each said chain being welded to a forward corner on the bottom surface of said base member; and

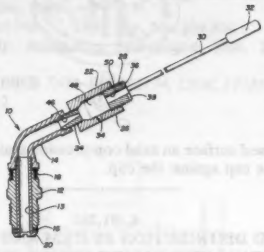
(ii) a plurality of cross bars located in substantially evenly and longitudinally spaced positions along the length of said chains and with their central longitudinal axes residing parallel with each other and with the central longitudinal axes of said top and bottom rib members, said cross bars each being formed of strip angle iron and being oriented in an inverted V relation on said chains, each end of each said cross bar being welded to a link of said chain with such link as viewed from one end of such cross bar having its central longitudinal axis perpendicular to a reference line passing through the apex of said cross bar and bisecting a base line passing through the outermost extremities of said cross bar, the trailing one of said cross bars being spaced forwardly of the forwardmost said top rib by a distance substantially equal to the distance between said top ribs.

4,361,278

IRRIGATION SPRINKLER

Donald J. Finley, Rte. 1, Box 77, Breckenridge, Tex. 76024

Filed Nov. 24, 1980, Ser. No. 209,430
Int. Cl.³ B05B *7/00*
U.S. Cl. 239—8 **3 Claims**



1. An irrigation sprinkler comprising:

(a) a sprinkler body rotatably mounted on a source of water such that said sprinkler body may rotate on an axis;

(b) a nozzle attached to said sprinkler body having an interior bore for radially outward and generally upward ejection of a stream of water from said nozzle;

(c) an aeration chamber attached to said nozzle having a side wall, an outlet port, and an aeration port, said outlet bort being downstream of said nozzle and said outlet port being of a greater diameter than said interior bore of said nozzle, said aeration port being disposed in said side wall such that air enters a cavity within said aeration chamber through said aeration port and mixes with said stream of water ejected from said nozzle to form a core stream and a peripheral low-velocity stream; and

(d) said aeration port being located in said side wall of said aeration chamber at a location such that a quantity of water retained within said cavity of said aeration chamber intermittently blocks said aeration port thereby causing repetitive surging of said peripheral low-velocity stream.

4,361,279

COMBINED CONTAINER AND DISPENSER FOR VOLATILE PRODUCT

Robert C. Beacham, Pleasanton, Calif., assignor to The Clorox Company, Oakland, Calif.

Filed Nov. 3, 1980, Ser. No. 203,189
Int. Cl.³ A61L *9/00*
U.S. Cl. 239—56 **13 Claims**

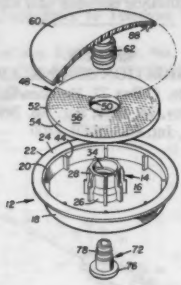
1. A container for a volatile product comprising; an annular cup including first axial coupling means for coupling of a closure to the cup, an annular recess disposed around the coupling means, and a rim disposed on the perimeter of said annular recess, said rim including means defining a seal surface thereon which is normal to said axial coupling,

a closure comprising a cap having a second axial coupling means adapted for coupling with said first axial coupling means,

said coupling means being threadably engagable for coupling of said cap to said cup in selective engagement therewith as said cap is rotated with respect to said cup, said cap and said cup being manually engagable on rims spaced radially from said coupling means for torque advantage in engaging said cap and said cup,

an annular seal ring disposed on the cap and arranged to

contact said seal surface when said coupling means are fully engaged, and wherein said seal ring will form with



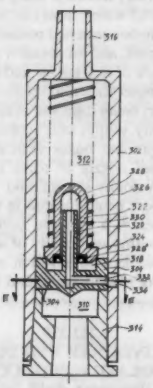
said seal surface an axial compression seal upon tightening of the cap against the cup.

4,361,280

FLUID DISTRIBUTION SYSTEM AND PRESSURE EQUALIZER-VALVES USEFUL THEREIN

Peretz Rosenberg, Moshav Beit Shearim, Israel

Filed Jun. 27, 1979, Ser. No. 52,503
Claims priority, application Israel, Dec. 15, 1978, 56216
Int. Cl.³ B05B *15/00*
U.S. Cl. 239—76 **5 Claims**



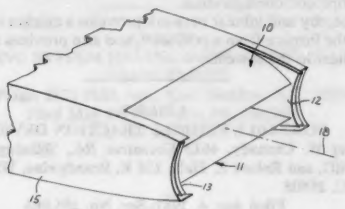
1. A pressure-equalizer valve particularly useful in a fluid distribution system for supplying fluid to a plurality of utilization devices, comprising: a housing having an inlet, an outlet, and a connecting passageway therebetween; a valve member located on the outlet side of said passageway such that the outlet pressure tends to move same to restrict the passageway and the inlet pressure tends to move same to enlarge the passageway; biassing means for applying a constant force to said valve member tending to move same to restrict said passageway; a chamber of smaller cross-sectional area than the valve member and defined by a stem fixed to the housing and a cylinder disposed at the outlet side of the housing and coupled to the valve member such that movement of the cylinder in one direction to contract the chamber moves the valve member to restrict said passageway, and movement of the cylinder in the opposite direction to expand the chamber moves the valve member to enlarge said passageway; said chamber being vented to the atmosphere; whereby said pressure-equalizer valve produces a pressure drop including a first component to compensate for the elevation of the utilization device relative to that of the inlet to the system which first component depends on the force applied by said biassing means, and a second component to compensate for the location of the utilization device from the inlet to the system which second component depends on the cross-sectional area of said chamber relative to that of the valve member.

4,361,281

EXHAUST NOZZLE

Dudley O. Nash, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Jul. 7, 1980, Ser. No. 166,286
Int. Cl.³ B64C *15/06*
U.S. Cl. 239—265.37 **8 Claims**



1. An exhaust nozzle mounted downstream of and adjacent to an exhaust casing of an engine comprising:

(a) a plurality of spaced flap assemblies, each flap assembly comprising:

(i) a convergent flap having an upstream end pivotally connected with said exhaust casing; and

(ii) a divergent flap having an upstream end pivotally connected with a downstream end of said convergent flap and including camming means defined at each transverse side of the outer surface thereof;

(b) at least one actuation means having an output effective for rotating a plurality of rotatable shafts; and

(c) a plurality of pivoting means for transforming the output of respective ones of said plurality of rotatable shafts of said actuation means through engagement with said camming means into pivotal movement of respective ones of said flap assemblies, each of said plurality of pivoting means comprising:

(i) a crank having one end fixedly connected with one of said rotatable shafts and an opposite end having a follower thereon for engaging said camming means of a respective divergent flap for effecting pivotal movement thereof;

(ii) a link arm having one end pivotally connected with an intermediate portion of said crank and an opposite end pivotally connected with said downstream end of a respective convergent flap for effecting pivotal movement thereof.

4,361,282

PULSATING NOZZLE

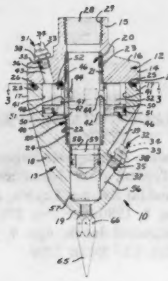
Angelo DiVito, 1354 S. Belvoir Blvd., South Euclid, Ohio 44121

Filed Feb. 25, 1981, Ser. No. 238,019
Int. Cl.³ B05B *1/34*
U.S. Cl. 239—383 **7 Claims**

1. A pulsating fluid nozzle which comprises:

a body having an inner chamber and an outer chamber extending around the inner chamber, the inner chamber separated from the outer chamber by a wall having a cylindrical outer shape, the body also having a fluid inlet connected to supply fluid to the inner chamber and a fluid outlet connected to receive fluid from the outer chamber, the wall having a port through which fluid can flow from the inner chamber to the outer chamber; and

a rotor mounted around the wall for rotation in the outer chamber, the rotor having at least one blade extending from a hub, the hub adapted to fit against the wall and block the flow of fluid through the port in the wall, the hub having an opening adapted to intermittently coincide with the port in the wall as the rotor turns to intermittently permit the flow of fluid through the port to produce a pulsating flow, the blade adjacent to the opening and positioned to be contacted by a stream of fluid flowing through the port when the opening coincides with the port, the contact by the stream of fluid propelling the blade to turn the rotor.

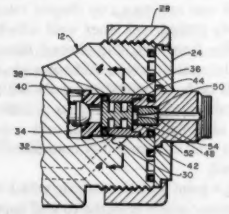


4,361,283

PLURAL COMPONENT SPRAY GUN CONVERTIBLE FROM AIR ATOMIZING TO AIRLESS

Robert D. Hetherington, Sunland, and David O'Reilly, Newbury Park, both of Calif., assignors to Binks Manufacturing Company, Franklin Park, Ill.

Filed Sep. 15, 1980, Ser. No. 186,979
Int. Cl.³ B05B *7/08, 15/02*
U.S. Cl. 239—415 **10 Claims**



1. A convertible spray gun which is convertible from a air atomizing gun to a low pressure airless spray gun in which said spray gun has a handle body with a trigger for controlling the flow of plural fluid components supplied to a plurality of concentric nozzles, the improvement comprising:

an air atomizing chamber for atomizing one of said fluid components adjacent to the outlet to one of said nozzles;

air supply means including an air delivery passageway connected to said air atomizing chamber for supplying air to said air atomizing chamber when said gun is in the air atomizing configuration;

sealing means adapted to seal off said air supply to said air atomizing chamber to convert said gun to a low pressure airless type comprising:

sleeve insert means adapted to be slid into said air atomizing chamber to block said air delivery passageway;

interchangeable nozzle means having a centrally located flange adapted to abut said sleeve insert means to seal said air delivery passageway from the flow of a fluid component through said sleeve insert;

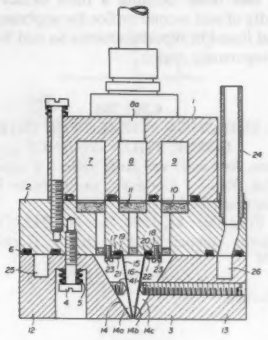
flow control assist means for controlling the flow of fluid through said sleeve to said nozzle whereby a uniform flow of said fluid component is supplied to said nozzle.

4,361,284

NOZZLE FOR THE CONTINUOUS DEPOSITING OF A LAYER OF SOLID MATERIAL ON A SUBSTRATE

Reinhard Kalbskopf, Onex, and Otto Baumberger, Carouge, both of Switzerland, assignors to Societa Italiana Vetro-Siv-S.p.A., San Salvo, Italy

Filed Nov. 7, 1980, Ser. No. 204,806
Claims priority, application Switzerland, Nov. 21, 1979, 10377/79
Int. Cl.³ B05B *7/00;* **B05D** *1/34;* **C03C** *17/245*
U.S. Cl. 239—422 **7 Claims**



1. A nozzle for the continuous deposition on a heated substrate of a layer of solid material produced by the reaction at said substrate of at least two tangentially adjacent gas streams, which nozzle comprises enclosure means defining therein a prismatic cavity having a truncated apex which forms a longitudinal outlet slot; two metal strips each extending along the prismatic cavity and over the entire height thereof, thereby dividing said cavity into three substantially equal prismatic volumes, each strip having a longitudinal edge disposed in said longitudinal slot, said edges dividing said longitudinal slot into three parallel slots; means defining at least one inlet aperture communicating with each of said prismatic volumes for admission of a respective reagent; support surfaces disposed in the vicinity of each of the strip ends, each support surface having a respective inclination such that said surface is aligned with said truncated apex, said strips having respective end regions disposed in contact with respective said support surfaces for locating said strips in alignment with said apex; and longitudinal tensioning means connected to said strips for maintaining said strips in contact with said support surfaces.

4,361,285

MIXING NOZZLE

Hugh P. Koppehele, Fairfield, and James J. Gardner, Hamilton, both of Ohio, assignors to Fluid Kinetics, Inc., Fairfield, Ohio

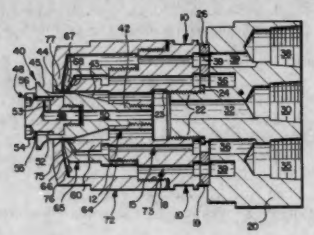
Filed Jun. 3, 1980, Ser. No. 156,222
Int. Cl.³ B05B *7/06*
U.S. Cl. 239—424 **3 Claims**

1. A mixing nozzle comprising:

a body having means defining a first orifice for directing a thin film of gas outwardly therefrom at supersonic speed for subsequent transition to subsonic speed at a region outwardly of said orifice,

means in said body defining a second orifice position immediately outwardly of said first orifice for applying a thin

film of a first liquid in superimposed relation to said gas at said supersonic region, and



means in said body defining a third orifice immediately outwardly of said second orifice for applying a thin film of a second liquid in superimposition to said first liquid film at said supersonic region.

4,361,286

FUEL INJECTION NOZZLE FOR INTERNAL COMBUSTION ENGINES

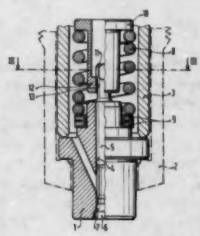
Karl Hofmann, Remseck, and Kurt Seifert, Esslingen-Zollberg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 11, 1980, Ser. No. 215,471

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1979, 2949655

Int. Cl.³ F02M *61/16, 61/08*

U.S. Cl. 239—453 **2 Claims**



1. A fuel injection nozzle for internal combustion engines including a nozzle body having an inner bore, a valve needle including a body portion whose major length portion is guided in the inner bore of said nozzle body, said valve needle including a headed area and a contiguous neck portion, said nozzle body having a shoulder area, a compression spring member supported on one end by said shoulder area, a spring plate element including a shouldered end positioned in abutment with another end of said spring member, said spring plate element having an elongated dependent cup shaped body that extends from said shouldered end coaxially into said spring member along a major portion of the length of said spring member and terminates in a base, provided with an oblong recess passage through which said headed area of said valve needle extends, a recess in said base in which said headed area having a tapered portion extending from said neck portion to the outer dimension of said head seats, said recess including at least one straight side wall with upwardly tapered walls, characterized in that said headed area of said valve needle further includes oppositely disposed flattened face portions which lie in planes that are coplanar with said neck portion of said valve needle, said flattened face portions arranged to be introduced through said oblong passage in said base of said spring plate and rotated 90° to lock the valve needle in said recess in the base of said spring plate element under influence of said spring member.

4,361,287

ROTARY TYPE ELECTROSTATIC SPRAY PAINTING DEVICE

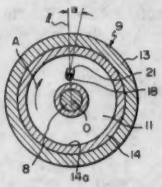
Teru Morishita, Shizuoka; Matsuyoshi Sugiyama, Susono, and Toshikazu Suzuki, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Aug. 8, 1980, Ser. No. 176,332

Claims priority, application Japan, Apr. 4, 1980, 55-443449

Int. Cl.³ B05B *5/04*

U.S. Cl. 239—703 **19 Claims**



1. A rotary type electrostatic spray painting device comprising:

a metallic housing;

a metallic rotary shaft rotatably arranged in said housing and having a front end and a rear end;

a cup shaped metallic spray head fixed onto the front end of said rotaty shaft and having a cup shaped inner wall and an approximately cylindrical inner wall which is spaced radially inwardly from said cup shaped inner wall and defines an annular space therein, said approximately cylindrical inner wall being arranged coaxially with a rotation axis of said rotary shaft and having a plurality of paint outflow bores, each being formed in said approximately cylindrical inner wall and smoothly connected to said cup shaped inner wall;

feed means having a paint injection nozzle which is arranged in said annular space and is directed to said approximately cylindrical inner wall for feeing a paint onto said approximately cylindrical inner wall said paint injection nozzle being inclined in the direction of rotation of said spray head by a predetermined angle with respect to a radial line of said spray head which crosses said paint injection nozzle;

drive means cooperating with said rotary shaft for rotating said rotary shaft;

non-contact type radial bearing means arranged in said housing and cooperating with said rotary shaft for radially supporting said rotary shaft under a non-contacting state;

non-contact type thrust bearing means arranged in said housing and cooperating with said rotary shaft for axially supporting said rotaty shaft under a non-contacting state;

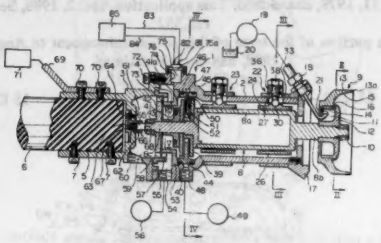
terminal means for receiving a negative high voltage, said terminal means being connected to said metallic housing, and; electrode means arranged in said metallic housing for electrically connecting said terminal means to said spray head.

4,361,288

ROTATING SPEED DETECTING DEVICE OF A ROTARY TYPE ELECTROSTATIC SPRAY PAINTING DEVICE

Daiki Fukuda, Susono; Teru Morishita, Shizuoka, and Toshikazu Suzuki, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 17, 1980, Ser. No. 188,214
Claims priority, application Japan, Apr. 4, 1980, 55-43448
Int. Cl.³ B05B 5/04
U.S. Cl. 239—703 6 Claims



1. A rotating speed detecting device for a rotary-type electrostatic spray painting device having a housing and a rotary shaft arranged in the housing, the detecting device further comprising:

an annular member fixed on the rotary shaft and having an annular groove formed therein, said annular groove being arranged concentrically about an axis of rotation of the rotary shaft;

an annular permanent magnet fixed into said annular groove and arranged concentrically about said axis of rotation of the rotary shaft; and

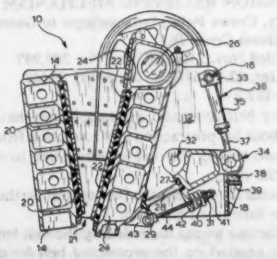
a detecting head mounted on the housing and arranged to be radially spaced from said annular permanent magnet, said detecting head having a cylindrical body made of an insulating material, said cylindrical body having embedded therein an induction coil, enclosed by said electrically insulating material, for producing an output signal representing the speed of rotation of the rotary shaft.

4,361,289

JAW CRUSHER

Jean-Pierre Georget, and Roger Lambrecht, both of Denain, France, assignors to Fives-Cail Babcock, Paris, France

Filed Jul. 6, 1980, Ser. No. 169,361
Claims priority, application France, Jul. 6, 1979, 79 17557
Int. Cl.³ B02C 1/04
U.S. Cl. 241—32 5 Claims



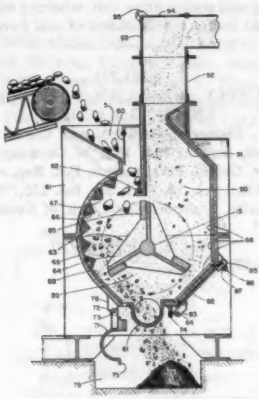
1. A jaw crusher comprising a frame, a stationary jaw carried by the frame, a mobile jaw associated with the stationary jaw and defining a crushing gap therewith, the mobile jaw having two ends, an eccentric shaft supporting one end of the mobile jaw on the frame, a crossbeam pivotally mounted on the frame, a connecting rod supporting the other end of the mobile jaw on the crossbeam, the crossbeam having a rear extension, the rear extension and the connecting rod extending in opposite direction from the crossbeam and being accessible from outside the frame, a bracket affixed to the frame, control wedge means positioned on the bracket between the bracket and the crossbeam extension, a safety system acting on the crossbeam extension for preventing pivoting thereof when the force applied by the mobile jaw to the crossbeam remains below a predetermined value, the safety system pressing the crossbeam extension against the control wedge means.

4,361,290

ADJUSTABLE ROTARY CRUSHER

Peter M. Francis, 4126 Salmon Dr., Orlando, Fla. 32811

Filed Jun. 23, 1980, Ser. No. 162,251
Int. Cl.³ B02C 13/286
U.S. Cl. 241—57 3 Claims



1. In an apparatus for crushing solid particles having a housing, inlet means for passing material to be crushed into an impact reduction chamber, an impact reduction chamber within the housing, an impact rotor having impact hammers at its periphery, drive means to rotate the impact rotor, a fluidizing rotor removably mounted near the bottom of the impact reduction chamber, and drive means to rotate the fluidizing rotor, the improvement therein which comprises an attrition chamber extending from the impact reduction chamber vertically above the impact rotor, first product exit means located at the bottom of the impact reduction chamber, second product exit means located in a lower portion of the housing opposite the inlet means and generally adjacent to the first product exit means, third product exit means located at an upper portion of the attrition chamber, and first, second, and third closure means to selectively close the first, second, and third product exit means.

4,361,291

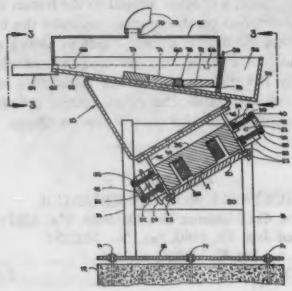
ELECTROMAGNETIC MILLING DEVICE

Jack T. Ellis, 1315 Pioneer Rd., and Travis W. Slaback, 2770 E. Unitah, Apt. #212, both of Colorado Springs, Colo. 80907

Filed Jul. 8, 1980, Ser. No. 166,952
Int. Cl.³ B02C 1/00
U.S. Cl. 241—79 12 Claims

1. Apparatus for crushing solid material, comprising a base, a trough having a material inlet end and a pulverant material outlet end, a power drive unit mounted on said base, for delivering a vibratory force to said trough and for supporting said

trough, a crusher bar in said trough for crushing material between said bar and said trough, and pulse generator means



for energizing said power drive unit, whereby solid material is crushed in said trough by the action of said power drive unit.

4,361,292

THREAD SUPPLY APPARATUS, PARTICULARLY FOR KNITTING MACHINE

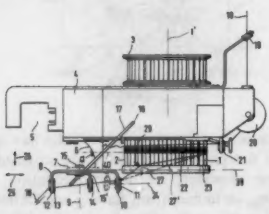
Josef Fecker, Bisingen-Steinhofen, and Gustav Memminger, Freudenstadt, both of Fed. Rep. of Germany, assignors to Memminger, GmbH, Freudenstadt, Fed. Rep. of Germany

Filed Feb. 18, 1981, Ser. No. 235,770

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1980, 3006197

Int. Cl.³ B65H *51/20*

U.S. Cl. 242—47.01 **21 Claims**



1. Thread supply apparatus for a textile machine, particularly for circular knitting machines, having

a holder (4) including means (5) for attaching the holder to the textile machine;

a thread storage drum (1) rotatable about an axis of rotation (1') and having a pull-off rim (23) journalled in the holder;

thread supply guide means (19, 20, 21) to guide the thread onto the drum so that, upon rotation of the drum, a plurality of storage windings (22) will accumulate on the drum, secured to the holder;

thread take-off guide means (11, 11*a*) to guide thread being pulled off the storage winding over said pull-off rim (23), secured to the holder,

and comprising,

support means (6, 6*a*, 8, 10) supporting said thread take-off guide means (11, 11*a*);

and adjustable attachment means (15, 31, 41) securing said thread take-off guide means to the support means in a plane (28) extending at right angles to said axis of rotation of the drum and selectively adjustably locating the thread take-off guide means in positions:

(a) at least two different angular positions of orientation with respect to said axis of rotation (1') of the drum in which positions the angle of the thread as it passes over said rim (23) upon being drawn off the drum and guided by the take-off guide means, is respectively different with respect to said plane; and

(b) with respect to the distance of the take-off guide means (11, 11*a*) from the rim (23) of the drum.

4,361,293

FISHING REEL

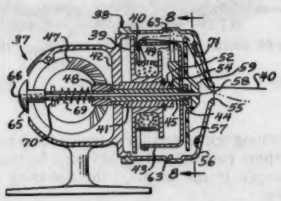
Robert C. Baenziger, 115 Voltz Rd., Northbrook, Ill. 60062

Continuation-in-part of Ser. No. 958,038, Nov. 6, 1978, abandoned, which is a continuation-in-part of Ser. No. 56,511, Jul. 11, 1979, abandoned. This application Apr. 2, 1980, Ser. No. 136,552

The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.

Int. Cl.³ A01K *89/01*

U.S. Cl. 242—84.2 R **15 Claims**



1. In a fishing reel of the type having a housing enclosing a non-rotating spool, said spool being adapted to discharge line therefrom through an aperture in said housing by unwinding of the line in a generally axial direction from one end of the spool and line take-up means rotatably mounted between the discharge end of said spool and said aperture for winding line onto the spool, said line take-up means including a generally radially-extending line engaging pin, the improvement in said fishing reel comprising:

flywheel means within said housing and means mounting said flywheel means between said line take-up means and said aperture, said flywheel means being mounted in a generally coaxial and freely rotating relationship with respect to said spool and said line take-up means, said flywheel means including line engaging means to engage the line during discharge from said spool to cause rotation of said flywheel means as line discharges from said spool, said reel further comprising annular means interior of said housing cooperative with said line-engaging pin to retain line in contact with said pin during line take-up.

4,361,294

TENSION RELIEVING MECHANISM

Gerald A. Doty, Crown Point, Ind., assignor to Gateway Industries, Inc., Hazel Crest, Ill.

Filed Nov. 21, 1980, Ser. No. 208,947

Int. Cl.³ A62B *35/00*; B65H *75/48*

U.S. Cl. 242—107.7 **18 Claims**

1. In a safety belt retractor, a rotatable reel having a belt wound thereabout for protraction and retraction from the reel;

a spring means biasing the reel to retract and to rewind the belt into the reel;

a locking means for locking the belt against further protraction at the time of an accident;

a tension relieving means for reducing the belt tension from that being exerted on the protracted belt by said return spring;

said tension relieving means including a rotatable member connected to said reel to rotate therewith and having a friction surface thereon;

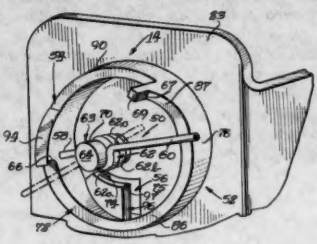
a coiled spring means having a coil for frictionally engaging said frictional surface with a change in size of the coil to

hold said member and said reel against rewinding the protracted belt thereby relieving tension of said spring means on the protracted belt worn by the occupant, and

control means for changing the size of said coil either to release said friction surface for turning or to hold said frictional surface,

the spring coil being positioned by said control means to cause the spring coil to frictionally engage the frictional surface and to relieve the tension on the belt after a predetermined distance of belt protraction following an initial belt protraction and slight retraction,

said spring coil being positioned by said control means to release the frictional surface after protraction through a greater distance than said predetermined distance and followed by a release of the belt and to stay released from the frictional surface allowing a rewind of the belt completely onto the reel.



4,361,295

SOLAR POWER STATION

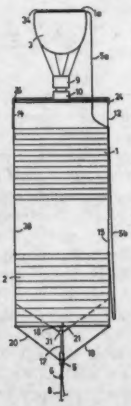
Joachim Wenzel, Hauptmannsreute 46, 7000 Stuttgart 1, Fed. Rep. of Germany

Filed Jan. 15, 1980, Ser. No. 112,220

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1979, 2901404

Int. Cl.³ B64B 1/54; H01L 31/12

U.S. Cl. 244—33 14 Claims



1. A solar power station comprising a plurality of substantially planar solar cell members each capable of producing electric current, flexible cable means connecting said solar cell members in spaced parallel with each other along a common axis, means for supporting said connected solar cell members airborne above the ground with said solar cell members suspended vertically along said common axis, a basket operatively arranged with said means for supporting said connected solar members and said flexible cable means, said basket including a part rotatable about the common axis having an array of crossed arms on which said flexible cable means are attached, and means for rotating said suspended solar collector members relative to the means for supporting said solar cell members, and a conductive cable interconnecting said solar cell member to conduct the current to the ground.

4,361,296

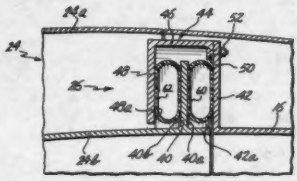
UNIFLANGE COUPLING ASSEMBLY

Leslie G. Hall, Bellevue; David V. Larson, Mercer Island; Michael A. Smith, Tacoma, and Stuart K. Wood, Seattle, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 10, 1980, Ser. No. 128,515

Int. Cl.³ B64D 27/00

U.S. Cl. 244—54 8 Claims



1. An apparatus for securing a first annular aircraft component to a second annular aircraft component, wherein one of said first and second components is a fan inlet duct for a jet propulsion engine and wherein the other of the said first and second components is a fan casing on a jet propulsion engine, the apparatus comprising:

a pair of spaced abutment members having annular, mutually opposing abutment surfaces thereon, said mutually opposing abutment surfaces being perpendicular to a longitudinal axis through the center of said annular components, said mutually opposing abutment surfaces being spaced along said longitudinal axis, said pair of abutment members being associated with said first aircraft component, a second component abutment member associated with said second aircraft component, said second component abutment member having oppositely facing abutment surfaces, said oppositely facing abutment surfaces being perpendicular to said longitudinal axis, said second component abutment member being sized and proportioned to reside in spaced relationship between said pair of abutment members so that each abutment surface on said second component abutment member opposes and is spaced from a respective one of the mutually opposing abutment surfaces on said pair of abutment members, thereby forming first and second sets of annularly shaped, mutually opposing surfaces perpendicular to said longitudinal axis; and

first and second toroidally shaped, flexible, substantially inelastic members positioned in contact only with said first and said second sets of mutually opposing surfaces respectively.

4,361,297
ATMOSPHERIC EXPLORATION VEHICLE

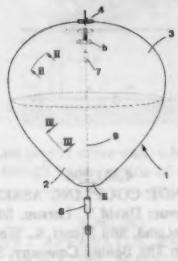
Jean-Pierre Pommereau, Paris, and Alain Hauchecorne, Palaiseau, both of France, assignors to A.N.V.A.R. (de l'Agence Nationale de Valorisation de la Recherche), Neuilly-sur-Seine, France

Continuation of Ser. No. 13,012, Feb. 21, 1979, abandoned. This application Jun. 29, 1981, Ser. No. 278,394

Claims priority, application France, Feb. 24, 1978, 78 05306

Int. Cl.³ B64B *1/40, 1/62*

U.S. Cl. 244—97 **24 Claims**



1. A vehicle of the montgolfier type for the exploration of the atmosphere, comprising:

a gas-tight envelope for containing a gas and carrying a load, said envelope including:

an under wall part substantially transparent to infra-red radiation, and

an upper wall part having an outer lining on said envelope slightly emissive to infra-red radiation and a covering on said envelope on said outer lining absorptive of the visible solar radiation coming from the atmosphere or an object in the atmosphere being explored and transparent to the infra-red radiation; and

an inner lining on said upper part absorptive to the infra-red radiation transmitted through said outer lining and said under wall part.

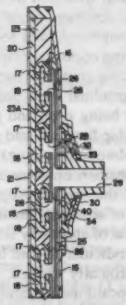
4,361,298
PNEUMATIC DEICER

Bernard F. Trares, Cuyahoga Falls, and Robinson F. Nichols, Stow, both of Ohio, assignors to The B.F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 884,923, Mar. 9, 1978, abandoned. This application Aug. 29, 1980, Ser. No. 182,531

Int. Cl.³ B64D *15/16*

U.S. Cl. 244—134 A **6 Claims**



1. An inflating deicer boot for mounting on an airfoil comprising a plurality of laterally spaced tubular members selectively inflated and deflated for breaking up the formation of ice on said airfoil; a manifold ply of rubberized materials extending transversely across said tubular members; said manifold ply having a passageway therethrough for the flow of air to pressurize or exhaust air from said tubular members; each of said tubular members having a port communicating with said passageway in said manifold ply; each of said tubular members being fabricated from tricot knit fabric; said tubular members being covered with a nonflowing rubberized compound containing greater than one percent by weight of cross-linked natural rubber prior to vulcanization that does not flow during vulcanization; a sealing layer of a vulcanizable material impervious to air overlaying said manifold ply and said tubular member, and at least another sealing layer of a vulcanizable material impervious to air underlaying said tubular members.

4,361,299
VARIABLE CAMBER WINGS

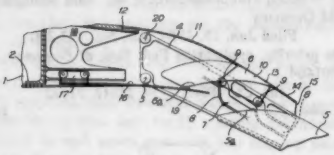
Barry Sharrock, Preston, England, assignor to British Aerospace Public Limited Company, Weybridge, England

Filed Oct. 16, 1980, Ser. No. 197,744

Claims priority, application United Kingdom, Oct. 19, 1979, 7936359

Int. Cl.³ B64C *9/16*

U.S. Cl. 244—216 **10 Claims**

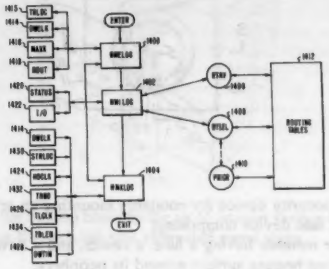


1. A variable camber wing which comprises a leading wing portion, movable flap means carried by and tiltable with respect to the leading wing portion, an intermediate wing portion lying between the leading wing portion and the flap means, and a flexible but substantially inextensible upper skin attached both to the leading portion and the intermediate wing portion, which skin includes a trailing portion extending generally rearwardly of the intermediate wing portion, one of the intermediate wing portion and the flap means including a trackway and the other including an associated engaging member received in the trackway for sliding movement, said trackway including spaced upper and lower leading and trailing generally chordwise track portions which are bridged by an intermediate track portion, the arrangement being such that when the flap means is tilted through relatively small angles, the upper skin defines a substantially continuous and smooth surface between the leading wing portion and the flap means, whilst when the flap means is tilted downwardly through relatively large angles, the resultant effective foreshortening of the upper skin causes the intermediate wing portion to be displaced from the flap means in a generally chordwise direction as the engaging member passes along the trackway until the engaging member enters the intermediate portion, whereupon the intermediate wing portion is displaced generally upwardly relative to the flap means and lifts the trailing portion of the skin therefrom.

4,361,300
VEHICLE TRAIN ROUTING APPARATUS AND METHOD

Donald L. Rush, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 8, 1980, Ser. No. 195,261
Int. Cl.[3] B61L *27/04*
U.S. Cl. 246—5 16 Claims



1. In apparatus for determining the route of a train including at least one vehicle moving along a roadway track having a known track plan, with said track including a plurality of stations and including at least one switch having a signal gate operative in response to movement of said train through one of said stations, the combination of

first means responsive to the train's being positioned at a predetermined location ahead of said one station and established by the movement time of said train to said one station,

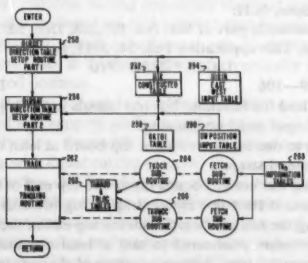
second means storing available routes determined in accordance with said track plan for said train to move to said one station from a second station positioned ahead of said one station,

third means coupled with said first means and coupled with said second means for selecting one of the available routes to said one station and for clearing said one route including the signal gate such that the movement of the train to said one station along said one route from said second station is permitted by said gate.

4,361,301
VEHICLE TRAIN TRACKING APPARATUS AND METHOD

Donald L. Rush, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 8, 1980, Ser. No. 195,279
Int. Cl.[3] B61L *23/30*
U.S. Cl. 246—34 R 25 Claims



1. In apparatus for tracking the movement of a train including at least one vehicle along a roadway track including a plurality of signal blocks, the combination of

first means for determining an occupancy of each signal block by said train,

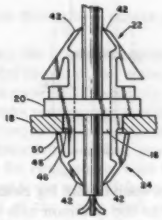
second means for determining an unoccupancy of each signal block by said train, and

third means responsive to each said occupancy and to each said unoccupancy for establishing a record of the position of said train in relation to each of said signal blocks of the roadway track.

4,361,302
CABLE CLAMP FOR ELECTRICAL OUTLET BOX

John L. Lass, Homewood, Ill., assignor to Square D Company, Palatine, Ill.

Filed Sep. 19, 1980, Ser. No. 188,445
Int. Cl.[3] F16L *5/00*
U.S. Cl. 248—56 6 Claims



1. A cable clamp for use with a non-metallic electrical outlet box having rectangular apertures in the walls thereof and for securing a non-metallic sheathed electrical cable to the electrical outlet box, said cable clamp comprising:

a substantially U-shaped base which is slightly larger than the rectangular aperture in the wall of the electrical outlet box; and

first and second claw members, each having a different size so that said cable clamp may be utilized with two different sized rectangular apertures in the non-metallic electrical outlet box and attached on opposite sides of said base for securing the electrical cable after said cable clamp is positioned on the electrical cable and one of said claw members is inserted through the rectangular aperture in the wall of the electrical outlet box;

wherein said claw member which is inside of the electrical outlet box digs into the electrical cable when a tension attempting to pull the cable out of the electrical outlet box is applied to the cable and also wherein the claw member outside of the electrical outlet box digs into the cable when a tension is applied to the cable attempting to force the cable into the electrical outlet box, thereby said cable clamp securely holds the cable in position when either a pushing or pulling tension is applied to the cable.

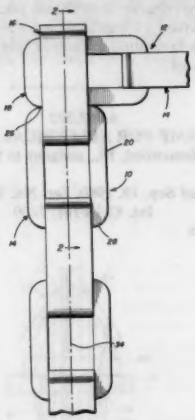
4,361,303
CHAIN-LINK CONSTRUCTION FOR ELONGATED STRUCTURAL COMPONENTS

Marvin P. Lanphear, P.O. Box 725, Brush, Colo. 80723

Filed Jul. 15, 1980, Ser. No. 168,358
Int. Cl.[3] F16M *11/20*
U.S. Cl. 248—188.1 21 Claims

1. In a rigid elongated structural component associated with a load supporting article including a plurality of longitudinally overlapping link-like sections alternately aligned with perpendicular planes intersecting along a common geometrical axis, wherein each of the link sections includes a pair of leg elements having opposite longitudinal ends and spaced bridging elements rigidly interconnecting the leg elements adjacent to said ends thereof, at least one of the bridging elements of each of

the link-like sections abutting one of the bridging elements of an adjacent one of the link-like sections, each of said link-like sections having a maximum width (W) as measured along one of said perpendicular planes substantially equal to the spacing between the leg elements as measured in the other of said



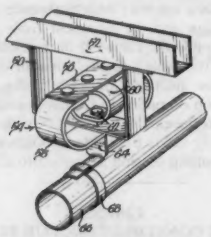
perpendicular planes, each of said leg elements having a thickness (T) transverse to the common axis as measured in said other of the perpendicular planes, the improvement residing in said bridging elements being spaced apart by a distance along the common axis substantially equal to said maximum width (W) and the thickness of both of the leg elements (2T).

4,361,304

EXHAUST SYSTEM HANGER

Gib Younger, Mt. Prospect, Ill., assignor to A. Lakin & Sons, Inc., Chicago, Ill.

Filed May 27, 1980, Ser. No. 153,085
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—544 **4 Claims**



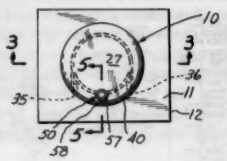
1. A resilient hanger for suspending an elongated object from a support comprising first bracket means connected to the support, second bracket means connected to the object, said first and second bracket means having spaced overlapping portions, and resilient means between said portions whereby said object is resiliently supported, said resilient means comprising a continuous loop of flexible material connected between said overlapping portions, said loop being under compression and accommodating longitudinal movement of said object relative to said support while remaining under compression.

4,361,305

SECURITY DEVICE FOR ROTATABLY MOUNTING AN ARTICLE TO A SURFACE

James S. Gassaway, 2356 Glendon Ave., Los Angeles, Calif. 90064

Filed Jan. 21, 1980, Ser. No. 113,672
Int. Cl.³ E05B *73/00*
U.S. Cl. 248—553 **13 Claims**



1. A security device for rotatably mounting an article to a surface, said device comprising:

a base member having a face, a center, and a downwardly facing bearing surface around its periphery;

a clasp member comprising a first part having a cover, an inside bounding wall, and an underlying flange at an elevation below said bounding wall, which flange includes a semi-circular bight and a pair of arms, said bight including an upwardly facing bearing surface which engages said bearing surface of said base member, said arms including a pair of slots which intersect the region between the bight and the cover, and a second part having a pair of tongues which are engagable and slidable in said slots, and a curved flange having an upwardly facing bearing surface, said last named bearing surface, when said tongues are engaged in said slots, engaging said downwardly facing bearing surface of said base member;

lock means for releasably holding the two clasp parts together; and

spacing attachment means fixed to said face of said base member for mounting said base member to said surface and spacing its bearing surface therefrom, whereby with the base member mounted to the surface, said clasp member parts can be slid together with the bearing surface of the base member rotatably engaged by the bearing surface of the clasp member parts, and the lock means locked to hold said clasp member parts together, an article being attachable to said cover.

4,361,306

HOT TOP BOARD, METHOD OF FASTENING TO INGOT MOLD, AND RESULTING ASSEMBLY

Robert F. Edwards, Hamilton, Canada, assignor to Pneutek, Inc., Hudson, N.H.

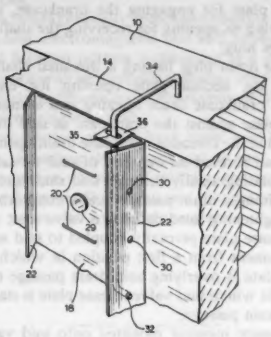
Continuation-in-part of Ser. No. 107,288, Dec. 26, 1979, abandoned. This application Feb. 24, 1981, Ser. No. 237,747
Int. Cl.³ B22D *7/10*
U.S. Cl. 249—106 **19 Claims**

1. A method for fastening hot top boards to the top interior of a metal ingot mold comprising:

fastening to one surface of a hot top board at least one elongated metal strap;

positioning the hot top board inside the top end of the mold with said at least one metal strap facing inwards and suspending the hot top board from the top end of the mold by hanger means connected to said at least one metal strap, each metal strap having a channel-shaped transverse cross-section with the base of the channel in contact with said one surface of the board, whereby the channel can

constitute a guiding and locating element for a nailing gun; and



nailing the hot top board to the mold interior surface by nails driven through the said elongated metal strap.

4,361,307

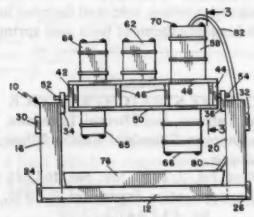
METHOD AND APPARATUS FOR MOLDING CERAMIC WARE

Carl R. Benavidez, 11304 Trebol St., San Diego, Calif. 92126

Continuation-in-part of Ser. No. 928,502, Aug. 10, 1978, abandoned. This application May 19, 1980, Ser. No. 150,916

Int. Cl.³ B41B *11/52*

U.S. Cl. 249—118 **5 Claims**



1. An apparatus for pivotally supporting and inverting multiple molds for high production casting of ceramic articles, comprising:

a base member having a pair of spaced apart support members extending upward therefrom,

a support platform having oppositely directed support faces pivotally mounted on said support members for pivoting at least 180° about a horizontal axis for presenting said support faces in a selected one of a vertically upright or inverted position,

a first plurality of open top molds detachably secured to one face of said support platform and opening in one direction for pivoting therewith between an upright position for filling with liquid casting material and an inverted position for pouring said liquid casting material therefrom, and,

a second plurality of open top molds detachably mounted on the other face of said platform and opening in the opposite direction so that said molds on said one side are inverted for pouring liquid casting material therefrom when molds on the other side are upright for filling with liquid casting material.

4,361,308

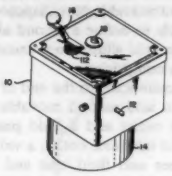
VALVE ACTUATOR

Jack Buss, 660 S. 305th St., Federal Way, Wash. 98003

Filed Apr. 11, 1980, Ser. No. 139,432

Int. Cl.³ F16K *31/04*

U.S. Cl. 251—134 **6 Claims**



1. A valve operator driven by a power source, comprising:

a housing

a worm gear within the housing coupled to the valve;

a drive shaft coupled to said power source including a worm portion which is capable of engaging the worm gear;

torque sensing means responsive to axial movement of said drive shaft, the torque sensing means including a pivotable support lever biased into a first position and having a bearing portion for engagement with the drive shaft, said pivotable support lever pivoted from its first position by axial movement of the drive shaft caused by excessive torque loading on the drive shaft to terminate delivery of power to the drive shaft;

disengagement means for disengaging the worm portion of the drive shaft from the worm gear, including a drive shaft support bracket attached to said housing for biased pivotal movement, said bracket having a bearing engaging the drive shaft while permitting rotational movement thereof, the support bracket pivotal to permit disengagement of the worm portion of the drive shaft from the worm gear, the disengagement means including manually operated means for pivoting the bracket; and

means for actuating a switch means responsive to movement of the valve to control the degree of opening or closing thereof, including a lead screw operatively connected to the drive shaft, a traveler threadably engaging the lead screw for movement parallel to the lead screw and engageable with said switch means and adjustable means for positioning the switch at positions parallel to the axis of the lead screw.

4,361,309

ELECTROMAGNETIC ACTUATOR

Ichita Sogabe, Gifu, Japan, assignor to Niipondenso Co., Ltd., Kariya, Japan

Filed Jun. 19, 1981, Ser. No. 275,507

Claims priority, application Japan, Jun. 23, 1980, 55/84706; Jun. 23, 1980, 55/84707

Int. Cl.³ F16K *31/06*; H01F *7/16*

U.S. Cl. 251—137 **12 Claims**

5. An electromagnetic actuator and valve assembly including:

an electromagnetic actuator;

valve means operatively connected to said actuator and actuated thereby to control the fluid flow through said valve means;

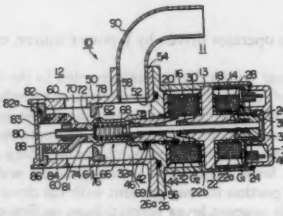
said actuator comprising;

a substantially cylindrical housing, first and second exciting coils disposed in said housing in axially aligned relationship, a fixed core having first and second poles positioned radially inwardly of said first and second coils, respectively, said fixed core defining therein an axial throughhole extending through said first and second poles, an

axially elongated rod extending slidably through said axial through-hole, a first movable core disposed to cooperate with said first pole to define a first air gap and fixed to said rod adjacent to one end thereof for axial movement with said rod, stop means provided on said housing adjacent to said first movable core, first biasing means for resiliently biasing said first movable core axially toward said stop means, a second movable core disposed to cooperate with said second pole to define a second air gap and mounted on said rod for axial sliding movement thereon;

said valve means comprising;

a valve housing connected to the end of said actuator housing adjacent to said second movable core and defining fluid inlet and outlet and a fluid passage extending between said fluid inlet and outlet, a valve seat in said fluid passage between said fluid inlet and outlet and a valve member disposed in said fluid passage and connected to



said second movable core of said actuator for movement therewith to cooperate with said valve seat to control the fluid flow through said fluid passage;

second biasing means operative to bias said second movable core in the axial direction opposite to the direction in which said first movable core is biased by said first biasing means; and

means for limiting the relative movement between said rod and said second movable core away from each other;

the arrangement being such that said valve member is positioned at a first position in contact with said valve seat when said first coil is energized, such that said valve member is positioned at a second position remote from said valve seat when said second coil is energized and such that said valve member is positioned at a third position between said first and second positions when said first and second coils are both deenergized.

4,361,310

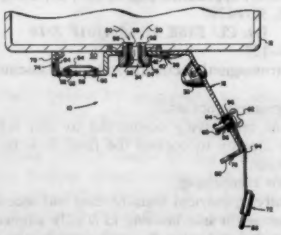
QUICK RELEASE DRAIN PLUG

J. Warren Cummins, 5616 Spring Valley, Apt. 120, Dallas, Tex. 75240

Filed Nov. 3, 1980, Ser. No. 203,604

Int. Cl.³ F16K *51/00, 1/16*

U.S. Cl. 251—144 **2 Claims**



1. A drain valve assembly for attachment to the threaded drain opening of an automobile crankcase comprising, in combination:

an anchor plate for engaging the crankcase, said anchor plate having an opening for receiving the shaft of a crankcase drain plug;

a crankcase drain plug having a threaded shaft extending through the anchor plate opening for engaging the threaded crankcase drain opening and compressing said anchor plate against the crankcase as said drain plug is tightened in the threaded crankcase drain opening, a tightening head formed on one end of said threaded shaft, a bore extending axially through said shaft and tightening head defining a drain passage, and a counterbore formed in said tightening head defining a valve seat;

a valve release plate pivotally coupled to said anchor plate for movement from a first position in which said valve release plate is overlying said drain passage to a second position in which said valve release plate is standing clear of said drain passage;

a valve closure member mounted onto said valve release plate, said valve closure member being moved into and out of sealing engagement with said valve seat in response to movement of said valve release plate to and from said first and second positions, respectively;

mutually engagable fastening means secured to said anchor plate and to said valve release plate for maintaining said valve closure member in sealing engagement with said valve seat when said release plate is in the first position, said fastening means being manually releasable to permit movement of said release plate to the second position for drainage of the crankcase; and,

said anchor plate having an offset panel portion defining a latch compartment, said panel portion having an access opening, said mutually engagable fastening means including a spring wire received within said latch compartment and secured at opposite ends to said anchor plate, said spring wire overlying said access opening and a stud fastener rotatably mounted on said releast plate and insertable into said access opening when said release plate is in the valve closed position, said stud fastener having a spiral cam for locking engagement with said spring wire.

4,361,311

CARPET STRETCHER DEVICE

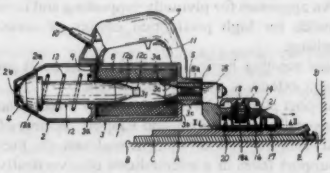
Arata Koroyasu, Tatsuno, and Hiroshi Takenaka, Himeji, both of Japan, assignors to Kabushiki Kaisha Nihon Gijutsu Center, Himeji, Japan

Filed Jul. 2, 1980, Ser. No. 164,511

Claims priority, application Japan, Jul. 9, 1979, 54/94927[U]

Int. Cl.³ A47G *27/04*

U.S. Cl. 254—200 **4 Claims**



1. In a carpet-stretching device having a handle and a carpet-engaging head with a spindle fixed to the rear thereof, the improvement which comprises:

(a) A front body case having a forwardly extending neck portion for receiving said spindle while permitting axial sliding movement thereof, an inwardly extending inner sleeve having a tapered hole for receiving a correspondingly tapered plunger, and means for venting between said tapered hole and the atmosphere;

(b) A central portion of said front body case having an axially extending electromagnetic coil installed therein

surrounding said tapered hole and extending rearwardly therefrom;

(c) An electromagnetically responsive plunger slidably fitted within said electromagnetic coil and having a conically tapered forward portion terminating in a projection axially aligned with said spindle such that the forward stroke of the plunger terminates in the vicinity of the front end of said electromagnetic coil;

(d) A rear portion of said front body case having an inwardly extending sleeve surrounding said coil and slidingly engaging the sides of said plunger; and

(e) Means for normally biasing said plunger away from said spindle when said coil is de-energized.

4,361,312

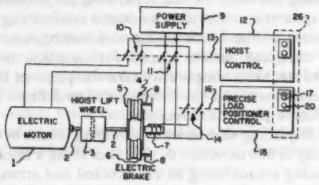
PRECISE LOAD POSITIONER

Kenneth D. Schreyer, Clarence, and Alton H. Cooper, Kenmore, both of N.Y., assignors to Columbus McKinnon Corporation, Tonawanda, N.Y.

Continuation of Ser. No. 10,070, Feb. 7, 1979, abandoned. This application May 13, 1981, Ser. No. 263,161

Int. Cl.³ B66D *1/48, 5/30*

U.S. Cl. 254—276 **11 Claims**



1. A precise positioner control system for targeting the lowering of a load which is suspended at an elevated position by means of a hoist of the type having a motor for driving the load lift wheel of the hoist and a brake co-acting with the lift wheel drive system such that when the hoist motor is actuated the brake is automatically released to permit the motor to drive the hoist and lift the load carried thereby, and when the motor is deactuated the brake is automatically engaged to prevent the load from lowering with respect to the hoist; said precise positioner control system being characterized by having:

manual control means manually operable only when said motor is deenergized for releasing said brake so as to permit the load carried by the hoist to descend in response to gravity forces, and automatic control means adapted to be pre-set so as to be automatically operable to reset said brake following a manually uncontrollable interval of predetermined extent subsequent to manually controlled release of said brake, so as to terminate said brake release function as the load arrives precisely at the operator's preselected lower target elevation, and wherein said automatic control means incorporates power supply switching means arranged so that upon operator-continuance of operation of said manual control means said auotmatic control means functions repetitively so as to permit lowering of said load successively throughout a series of automatically controlled periods of time until operation of said manual control means is discontinued.

4,361,313

DISMOUNTABLE BARRIER

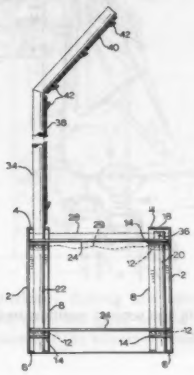
Lawrence O. Russell, Hamilton, Canada, assignor to North American Formula Promotions Corporation, Toronto, Canada

Continuation of Ser. No. 921,346, Jul. 3, 1978, abandoned. This application Jun. 13, 1980, Ser. No. 159,379

Claims priority, application Canada, Mar. 13, 1978, 298803

Int. Cl.³ E04H *17/16*

U.S. Cl. 256—13.1 **29 Claims**



14. A readily erected and dismounted elongated free standing roadway barrier assembly for flanking a roadway, comprising a plurality of panels flanged at at least one edge, said panels being disposable in two parallel rows on a supporting surface to present continuous outwardly directed vertically extending surfaces which are generally smooth and unobstructed in the longitudinal direction of the rows, and to present inturned lower flanges which are shaped to partially cover such a supporting surface between the rows and which are disposed to support a sufficient part of the weight of dense non-self-supporting material introduced between said rows for such material to restrain lifting of the panels and to support the panels and the barrier against overturning under impact during use, and releasable connecting means adapted to extend internally between said panels when so disposed in rows to connect said panels into said rows and said rows to each other, the connecting means being shaped to maintain the panels in laterally spaced relationship for material introduced between the rows to rest on such a supporting surface and thereby restrain lateral displacement of the barrier under impact.

4,361,314

DEVICE FOR ATTACHING A SECOND COMPONENT TO A FIRST COMPONENT IN A SECURE BUT DETACHABLE MANNER

Kurt L. Ohlson, Vendelsö skolväg 104, 136 71 Handen, Sweden

Filed Sep. 25, 1980, Ser. No. 190,571

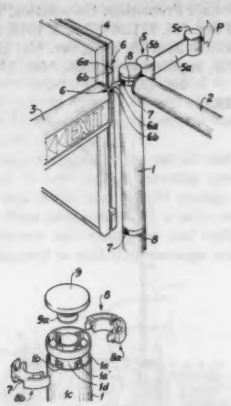
Claims priority, application Sweden, Sep. 25, 1979, 7907909

Int. Cl.³ E04H *17/14*

U.S. Cl. 256—65 **5 Claims**

1. A device for attaching a first component to a second component in a secure but detachable manner, the device comprising a clip arranged on the second component, the clip being in the form of an angle, a recess operatively associated with the first component, said recess being large enough to accept the clip, the first component working in conjunction with a locking device movable between first and second posi-

tions, said locking device in the first position accepting the clip in the recess for engagement with the first component, and the



locking device in the second position locking the clip to the first component.

4,361,315

SONDE APPARATUS FOR BLAST FURNACE

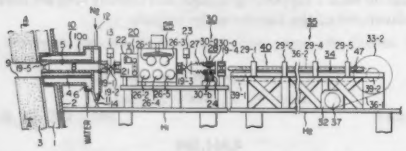
Toyota Kajihara; Atsushi Kawasaki; Fujikazu Nishio, all of Ohita, and Akira Esaki, Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 5, 1980, Ser. No. 213,733

Claims priority, application Japan, Dec. 21, 1979, 54-165690

Int. Cl.³ C21B 7/12

U.S. Cl. 266—99 **3 Claims**



1. A sonde apparatus for a blast furnace comprising: a blast furnace gas cut-off valve, a tubular lance straightening means and a gas seal means provided in succession and in communication with one another on a straight support line extending outwardly from a tubular lance ingress and egress port means, said gas seal means preventing furnace gas counterflow from said furnace and disposed on a refractory wall of said blast furnace; a lance ingress and egress drive means also provided in succession on said straight support line; and a tubular lance for detecting and measuring at least one condition existing within said blast furnace; wherein said lance is removably carried by said ingress and egress drive means from said furnace.

4,361,316

PLATE STACK CLAMPING APPARATUS FOR STORAGE BATTERY MANUFACTURE

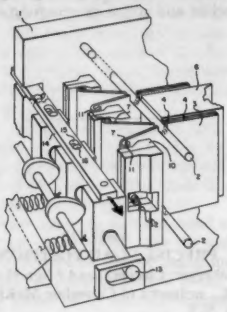
Hans-Joachim Golz, Hanover, and Joachim Illmann, Garbsen, both of Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Continuation of Ser. No. 29,448, Apr. 12, 1979, abandoned. This application Mar. 19, 1981, Ser. No. 245,587

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1978, 2825093

Int. Cl.³ B25B 1/20, 5/02, 5/14

U.S. Cl. 269—43 **8 Claims**



1. Apparatus for receiving, positioning and holding a plurality of plate stacks for lead storage batteries during a stage of battery manufacture before the plate stacks are inserted into the block casing between the cell separating partitions of said casing, said apparatus comprising a cassette conforming to the plan dimensions of the block casing and having a series of consecutive clamping means spaced for insertion between adjacent plate stacks to temporarily take the place of the cell separating partitions of the block casing and to define a plurality of consecutive plate stack receptacles,

means for displacing said series of clamping means in unison alternately in one direction or the other along a linear axis,

said displacing means being so constructed and arranged as to displace consecutive ones of said series of clamping means by distances which are increasing multiples of an amount x in response to displacement in said one direction, and to return said clamping means to their respective predisplacement positions in response to displacement in said other direction, said displacing means displacing said consecutive ones of said series of clamping means so as to exert clamping pressure on said plate stack within consecutive plate stack receptacles,

whereby the widths of all said plate stack receptacles are caused alternately to expand and contract in unison, and

means for causing at least some of said clamping means to controllably exert pressure along said axis upon plate stacks within the contracted receptacles which pressure adds to that exerted by the operation of said displacing means.

4,361,317

PROCESS AND APPARATUS FOR THE SINGLING OF THE SHEETS OF A PAPER STACK

Helmut Lapp-Emden, Yorkstr. 47, 4830 Gütersloh 1, Fed. Rep. of Germany

Filed Apr. 10, 1980, Ser. No. 138,914

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1979, 2915371

Int. Cl.³ B65H 1/30, 3/12

U.S. Cl. 271—3.1 **10 Claims**

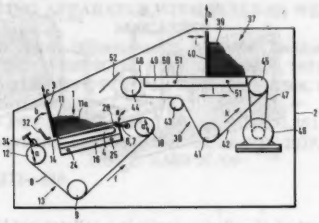
1. Apparatus for singling of sheets of a paper stack comprising:

a magazine for holding the stack;

a perforated endless conveyance band disposed under said magazine for individually transporting the sheets of the stack;

a suction box disposed below said conveyance band having an upper cover member supporting said conveyance band, said cover member having a concave surface transversely positioned relative to the transporting direction of said conveyance band, suction openings being provided in said cover member facing said magazine, said cover member being disposed below the lowest sheet of the stack positioned in said magazine;

first means through which a vacuum is applied to said suction box to provide a subpressure therein;



second means for grasping the lowest sheet when the lowest sheet is being transported but before the lowest sheet uncovers said suction openings of said suction box, at which time the vacuum is switched off to decompose the subpressure in said suction box;

third means through which a blast of air is introduced into said suction box when the vacuum is switched off so that the next sheet of the stack is not sucked onto the conveyance band at this time; and

said magazine and said suction box being inclined in the conveyance direction, a front stop being provided in front of said magazine, two front adjustable stack holders being disposed underneath said magazine, and two rear stack holders being disposed to the rear of said magazine and spaced from said front holders, the front and rear positions corresponding to the conveyance direction.

4,361,318

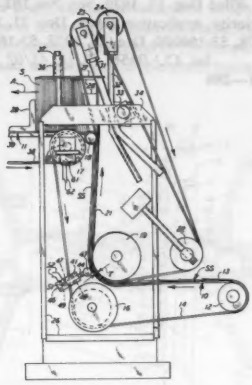
APPARATUS AND METHOD FOR CONTROLLING SHEET STACKER SPEED

Walter J. Stobb, Pittstown, N.J., assignor to Stobb, Inc., Clinton, N.J.

Filed Jul. 9, 1979, Ser. No. 55,504
Int. Cl.³ B65H *29/14, 31/06*
U.S. Cl. 271—202 **8 Claims**

1. Apparatus for controlling sheet stacker speed for the collection of a stack of sheets, comprising a first conveyor for the movable support of a stream of sheets having a thickness, a second conveyor for the movable support and collection of a stack of sheets formed from the stream of sheets on said first conveyor, a driver mechanism operatively associated with said second conveyor for driving said second conveyor at a controlled speed, a first sensor member operatively associated with said first conveyor and the stream of sheets on said first conveyor for detecting change in the thickness of the stream of sheets, a second sensor member operatively associated with said first conveyor for detecting change in the speed of said first conveyor, a transducer connected with both said sensor members and sensitive to any change detected by said first sensor member in the thickness of the stream of sheets and sensitive to any change in the speed of said first conveyor, said transducer being connected with said driver mechanism for controlling said driver mechanism and thereby controlling the speed of said second conveyor.

7. The method of controlling sheet stacker speed, comprising the steps of supporting sheets in a stream relation on a first driven conveyor, electronically sensing the speed of said first conveyor and the thickness of the stream of sheets, collecting the stream of sheets into a stack supported on a second driven



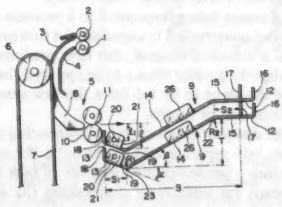
conveyor, and electrically driving said second driven conveyor in accordance with the speed of said first driven conveyor and the thickness of the stream of sheets.

4,361,319

BIN FOR RECEIVING SHEETS

Sunao Ikeda, Yokohama; Tamaki Kaneko, Fujisawa; Kunio Hibi, Yokohama; Tugio Okuzawa, Tokyo; Yohtaro Kakitani, and Hideo Kikuchi, both of Yokohama, all of Japan, assignors to Ricoh Co., Ltd., Japan

Filed Sep. 19, 1980, Ser. No. 188,723
Claims priority, application Japan, Sep. 29, 1979, 54-134811[U]
Int. Cl.³ B65H *31/00*
U.S. Cl. 271—209 **4 Claims**



1. A bin for receiving sheets arranged in an apparatus for collating or sorting of sheets fed successively, including a rear end portion having a plate extending substantially vertically for forming an aligning face of sheet-ends and an inclined plate extending downwardly, forwardly in a feeding direction of sheet, a front end portion with a stopper or stoppers, and an intermediate inclination portion for smoothly connecting the front end portion with a rear end portion which extends upwardly, forwardly in the feeding direction of sheet, said front end portion including a straight guide portion extending substantially horizontally for connecting with said intermediate inclination portion.

4,361,320

SHEET DISTRIBUTION METHOD AND APPARATUS

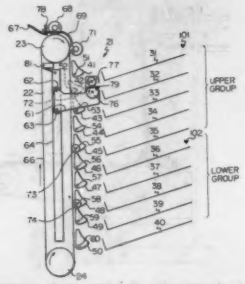
Hideo Kikuchi, and Tamaki Kaneko, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 11, 1979, Ser. No. 102,507

Claims priority, application Japan, Dec. 21, 1978, 53-156892; Dec. 28, 1978, 53-160980; Dec. 28, 1978, 53-160981

Int. Cl.[3] B65H *39/11, 43/02*

U.S. Cl. 271—288 26 Claims



1. A sheet distribution apparatus including a predetermined number of bins and distribution means for selectively distributing sheets into the bins, characterized by comprising:

first sensor means for sensing presence of a sheet at an inlet of the distribution means;

second sensor means for sensing presence of the sheet at an outlet of the distribution means; and

timing means responsive to the first and second sensor means for generating an alarm at a first predetermined time after the first sensor means senses the presence of the sheet unless the second sensor means senses presence of the sheet within the first predetermined time;

the first and second sensor means being constructed to produce first and second signals respectively in response to sensing of a leading edge of the sheet, the timing means generating the alarm unless the second signal is generated within the first predetermined time after the first signal is generated;

the distribution means comprising a fixed inlet means and an outlet means which is movable relative to the bins, the first and second sensor means being disposed adjacent to the inlet and outlet means respectively;

the timing means being responsive to a position of the outlet means and constructed to compute the first predetermined time as a function thereof, the first predetermined time being slightly greater than a time required for the leading edge of the sheet to be fed from the first sensor means to the second sensor means.

18. A sheet distribution method for distributing a plurality of sets of sheets into separate bins, comprising the steps of:

(a) providing a predetermined number of bins and distribution means for selectively distributing the sheets to the bins;

(b) computing whether a number of the sets of sheets is greater than the number of bins; and

(c) when the number of sets of sheets is greater than the number of bins, dividing the bins into first and second groups, distributing sets of sheets into the first group of bins and then distributing sets of sheets into the second group of bins;

the method further comprising the step, following step (b), of:

(i) computing whether a number of sheets in each set is greater than a predetermined number of sheets, step (c) comprising, when the number of sheets is greater than the predetermined number of sheets, dividing the bins into the first and second groups in such a manner that the first group contains more bins than the second group.

4,361,321

REMOVABLE BIN SYSTEM IN A COLLATOR

David H. Holliday, 15521-15th Ave. NE., Seattle, Wash. 98155

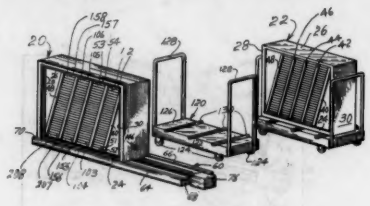
Division of Ser. No. 841,113, Oct. 11, 1977, Pat. No. 4,159,825.

This application Nov. 27, 1978, Ser. No. 963,972

The portion of the term of this patent subsequent to Jul. 3, 1996, has been disclaimed.

Int. Cl.[3] B65H *39/10*

U.S. Cl. 271—292 1 Claim



1. A method of collating copies in a collator and bin system characterized by

a. a collator having a movable collator frame member thereon adapted to receive the bin section frame hereinafter defined;

b. a bin section and a bin section frame integral therewith, the bin section having at least two columns of bins;

c. guide means on the collator frame member for guiding the bin section frame onto and off the collator frame member;

d. means on said collator for moving the collator frame member, thereby varying the location of the columns of bins therein relative to the collator; and,

e. a platform for receiving the bin section frame guided off the collator frame,

which comprises continuously feeding copies of each page to the bins, and simultaneously moving copies and columns with respect to each other horizontally and vertically whereby each page is fed one by one, bin by bin into said columns without interruption, page after page until a desired number of pages have been introduced into the bin section and thereafter guiding the bin section frame off the collator frame onto the platform and away from the collator frame, then moving a second like bin section frame onto the collator and thereafter collating copies therein while removing copies from the bins in said first bin section frame.

4,361,322

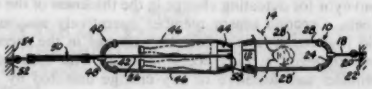
BODY STRETCHING EXERCISER

David L. Wells, P.O. Box #593, Dubois, Wyo. 82513

Filed May 15, 1981, Ser. No. 264,161

Int. Cl.[3] A63B *23/02, 21/10*

U.S. Cl. 272—126 4 Claims



1. A muscle and joint stretching exceriser for connection with upright supports at opposing limits of a horizontal support surface, comprising: head and foot traction means respectively connected with said upright

supports and projecting toward each other,

said head and foot traction means including flexible band means for surrounding longitudinally spaced portions of a user's supine body,

said head traction means further including, a first horizontally disposed U-shaped member having a bight position,

a first elongated resilient strand extending between the bight portion of said first U-shaped member and one said upright support, and,

strap means entrained intermediate its ends around the perimeter of said first U-shaped member and connected at its respective ends with one said band means; and,

hoist means interposed between one said traction means and the adjacent said upright support.

4,361,323
PULLING APPARATUS WITH BUILT-IN WEIGHT MAGAZINE

Ragnar Segersten, Poppelgatan 28 A, Malmö, Sweden

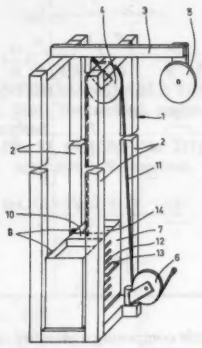
PCT No. PCT/SE80/00138, § 371 Date Jan. 13, 1981, § 102(e) Date Jan. 13, 1981, PCT Pub. No. WO80/02508, PCT Pub. Date Nov. 27, 1980

PCT Filed May 13, 1980, Ser. No. 232,262

Claims priority, application Sweden, May 14, 1979, 7904183

Int. Cl.³ A63B *21/06*

U.S. Cl. 272—118 **3 Claims**



1. A pulling apparatus, intended for muscle training and comprising a substantially vertical stand (1), a stack of weights (14), a weight lifting magazine (7) the weights, a magazine lifting which receives rope (11) fixed to the magazine and laid over suitable pulleys (4-6), and lifting plate members (13) for coupling the magazine to the required number of weights, said weight lifting magazine (7) has the form of a bottomless basket, said magazine having a side surface provided with holes (12) for receiving the lifting plate members, said lifting plate members disposed one above the other with a division corresponding to the spacing between the weights (14) in the stack, the weights are provided with yoke-shaped components (15), which serve on the one hand as guides for the weights and on the other hand form spacers between the weights.

4,361,324
APPARATUS FOR PHYSICAL CULTURE AND PHYSIOTHERAPY

Stephan I. Baroi, 8, Avenue de Miremont, 1206 Geneva, Switzerland

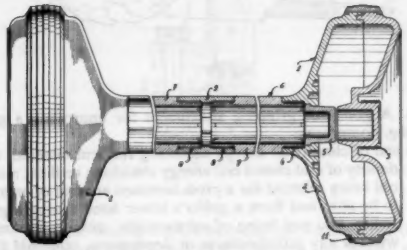
Filed Sep. 5, 1979, Ser. No. 72,769

Claims priority, application Switzerland, Oct. 10, 1978, 10483/78

Int. Cl.³ A63B *13/00*

U.S. Cl. 272—123 **3 Claims**

1. In apparatus for physical culture and physiotherapy comprising at least two hollow bodies, each said body having a filling opening sealed by a plug and coupling device on opposite sides of the body, and elongated handle means detachably interconnecting the two bodies and secured at one end of the handle means to the coupling device of one hollow body and at the other end of the handle means to the coupling device of the other hollow body; the improvement in which said handle means comprises at least two rectilinear elements, one of the elements being detachably connected to the coupling device of one said body and another of the elements being detachably



connected to the coupling means of the other body, said coupling device including a coupling means detachably interconnecting the rectilinear elements, a rotatable sleeve covering said handle means, further said rectilinear elements on the sides of said hollow bodies opposite said handle means and detachably connected to said coupling means of said hollow bodies, and further hollow bodies detachably interconnected with said further rectilinear elements at a distance from the first-mentioned hollow bodies.

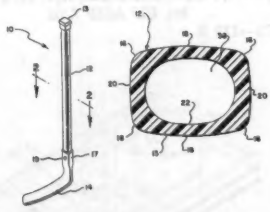
4,361,325
HOCKEY STICK SHAFT

T. Paul Jansen, Clarence, N.Y., assignor to Brimms Inc., Tonawanda, N.Y.

Filed Apr. 3, 1981, Ser. No. 250,559

Int. Cl.³ A63B *59/14, 59/12*

U.S. Cl. 273—67 A **3 Claims**

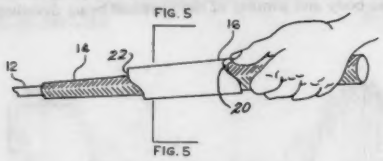


1. A hollow, elongated handle for game sticks or the like, said handle having a uniform cross-sectional configuration substantially throughout its length, said cross-sectional configuration comprising a pair of opposed first walls having convex outer faces and a pair of opposed second walls having convex outer faces, said first walls being longer than said second walls, the outer faces of said first walls and said second walls being interconnected by rounded corner portions to define a substantially rectangular cross-section, said handle having an arcuate inner surface defining a hollow area, said first and said second walls and said corner portions having varying wall thicknesses defined by the exterior surface of said cross-section and said inner surface, the minimum wall thickness of said second walls being greater than the minimum wall thickness of said first walls, and the maximum wall thickness of said corner portions being greater than the minimum wall thicknesses of each of said first walls and of said second walls.

4,361,326
GOLF CLUB GRIP PAD

Ivan J. Kokes, Valley View Dr., Waverly, N.Y. 14892

Filed Feb. 11, 1980, Ser. No. 120,703
Int. Cl.³ A63B 53/14
U.S. Cl. 273—81 D 3 Claims



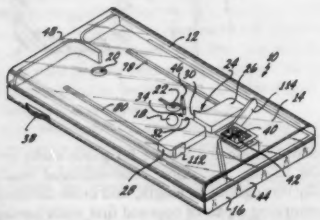
1. A golf club gripping attachment for improving a golf swing, comprising:

a pad of closed cell energy absorbing resilient material, the density of said closed cell energy absorbing resilient material being selected for a predetermined amount of energy to be absorbed from a golfer's lower hand during a golf swing, said pad being of substantially uniform thickness without any protuberances or depressions, said paid further comprising an upper edge having cut out portion, said cut out portion being longitudinally oriented within the plane of the thickness of said pad, said cut out portion being adapted to align said pad with a thumb on said golfer's upper hand, said pad being sized and positioned on said golf club to accept only said golfer's lower hand, the transverse dimension of said pad being sized to encircle the handle of a golf club, said pad further comprising an adhesive backing for attaching said pad to a handle of (said) a golf club in a position determined by said golfer to avoid rotation of said pad relative to said handle and said golfer's upper hand.

4,361,327
TOY HAVING A SPLIT MOVABLE MEMBER

Toshiaki Kurita, Torrance, Calif., and Masanori Mizunuma, Tokyo, Japan, assignors to Tomy Kogyo Company, Inc., Tokyo, Japan

Filed Mar. 12, 1981, Ser. No. 242,974
Claims priority, application Japan, Apr. 11, 1980, 55-49192
Int. Cl.³ A63F 7/02
U.S. Cl. 273—119 R 11 Claims



1. A toy which comprises:

a housing;

at least one object movably located on said housing;

an object moving means located on said housing, said object moving means having at least two sections;

elongated guide means located on said housing, each of said sections operatively associated with said guide means, said sections movable with respect to each other along said guide means and each of said sections independently linearly movable with respect to said housing, said guide means being formed so that said sections can only be moved along parallel paths;

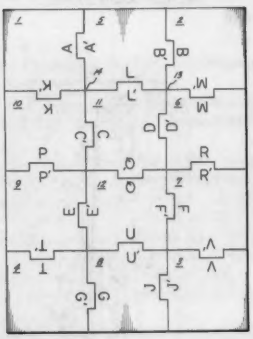
means located on said housing for independently moving each of said sections of said object moving means on said housing;

said sections having a cooperative position with respect to each other and said sections being linearly movable on said housing in said cooperative position by coordinating the independent linear movement of said sections with respect to one another, said object moving means capable of moving said object on said housing from a first point to a second point when said two sections are in said cooperative position and said object is in simultaneous association with both of said sections and said sections are maintained in said cooperative position by coordinating said independent movement of said sections with respect to one another.

4,361,328
SHEET INTERFITTING SECTION PUZZLE

Age Stein, Mountlake Terrace, and Douglas E. Winters, Bothell, both of Wash.

Filed Dec. 31, 1979, Ser. No. 108,947
Int. Cl.³ A63F 9/10
U.S. Cl. 273—156 17 Claims



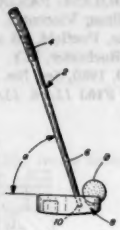
12. A sheet puzzle comprising a plurality of pieces of generally the same size and shape, which plurality of pieces can be arranged in one and only one combination with each piece internal edge in complementally abutting relationship with an internal edge of another piece, each piece being incongruent with respect to all other pieces and no combination of complementally abutted pieces in said one and only one combination being congruent with any other combination of complementally abutted pieces in said one and only one combination, each of a plurality of internal edges of said pieces being complemental to each of a plurality of other internal edges of said pieces and fittable contiguously therewith, which plurality of pieces include at least two internal pieces having only internal edges, each edge of a first one of said internal pieces bearing an indicium having a base and a top with only its base located adjacent to such internal edge of said first internal piece and each edge of a second one of said internal pieces bearing an indicium having a base and a top with only its top located adjacent to such internal edge of said second internal piece.

4,361,329
PUTTING CLUB INCLUDING BALL PICK UP DEVICE

James A. Brock, 2166 West Blvd., Cleveland, Ohio 44102

Filed Oct. 14, 1980, Ser. No. 196,738
Int. Cl.³ A63B 53/04
U.S. Cl. 273—162 E 2 Claims

1. A golf putter device comprising an elongated head member and an elongated shaft member secured at one end to said head member, said shaft being disposed at an acute angle with respect to the general plane of said head member and being

off-set forwardly of the center of gravity and forward of the geometric center of said head member, said head member including a recessed portion disposed adjacent its forward most end adapted for scooping up a golf ball, the rearward

most end of said head member having a removable counterweight means disposed therein, and said recessed portion providing a void area to dynamically balance the head member in relation to the counter-weight means so that said shaft is located forward of the "sweet spot" of the head member.

4,361,330

TARGET WITH INTERCHANGEABLE TARGET IMAGES

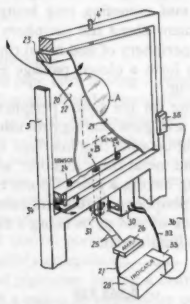
Ferdinand Schärer, Muri, Switzerland, assignor to Polytronic AG, Muri, Switzerland

Filed Jan. 23, 1981, Ser. No. 227,769

Claims priority, application Switzerland, Jan. 24, 1980, 565/80

Int. Cl.³ F41J *9/24, 7/00*

U.S. Cl. 273—372 4 Claims



1. A target for firearm practice, comprising:

an upright;

a frame on said upright with opposite vertical sides spanned by a pair of sheets carrying different target images, said frame being pivotally supported on said upright for rotation into either of two diametrically opposite working positions respectively displaying said target images to a marksman standing on a given side of said upright;

electroacoustic sensing means in said frame for ascertaining the point of impact of a shot striking either of said sheets;

indicator means connected to said sensing means; and

switch means on said upright connected to said indicator means and operable by said frame in either of said working positions for activating said indicator means to register the occurrence of a hit but deactivating same in any other frame position.

4,361,331

SEAL FOR VACUUM FLANGE CONNECTIONS

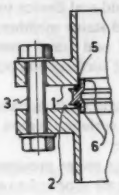
Marcel Kohler, Fürstentum, Liechtenstein, assignor to Balzers Aktiengesellschaft für Hochvakuumtechnic und Dünne Schichten, Liechtenstein

Filed Nov. 14, 1980, Ser. No. 199,499

Claims priority, application Switzerland, Oct. 22, 1979, 9807/79

Int. Cl.³ F16J *15/08*

U.S. Cl. 277—1 10 Claims



1. A seal for sealing a space between two flanges of a vacuum flange connection comprising, a support ring having two resiliently movable wall portions each associated with one flange and a plastically deformable seal ring disposed and deformable between each resiliently movable wall portion and an associated flange, whereby, when the space is sealed, the resiliently movable wall portions press said plastically deformable seal rings against their associated flanges and maintain the pressure even with variations in temperature.

4,361,332

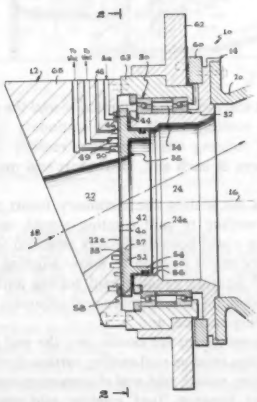
ROTATABLE SEAL ASSEMBLY

Clinton M. Logan, Pleasanton, and Jack L. Garibaldi, Livermore, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 12, 1980, Ser. No. 206,233

Int. Cl.³ B01J *17/00;* F16J *15/40*

U.S. Cl. 277—3 8 Claims



1. A rotatable seal assembly comprising:

a stator member having a chamber with an opening extending entirely through said stator member;

a rotor member having a chamber with an opening extending entirely through said rotor member along a first axis;

said rotor member being positioned partially within said stator member;

a bearing assembly operatively connected between said

stator member and said rotor member which supports said rotor member in rotation about a predetermined axis with respect to said stator member, and with their openings in communication;

a seal device mounted on said rotor member and having a hole extending centrally therethrough in axial alignment with said opening in said rotor member and through which said openings of said stator member and rotor member communicate, said seal device being shiftable in position on said rotor member while remaining sealed thereto to enable said seal device to move slightly toward and away from said stator member;

said seal device and said stator member having adjacent substantially mating surfaces and positioned to form a gap therebetween;

means supported on said rotor member for biasing said seal device to urge the surface thereon toward the surface of said stator member;

means for directing air under pressure into said gap; and

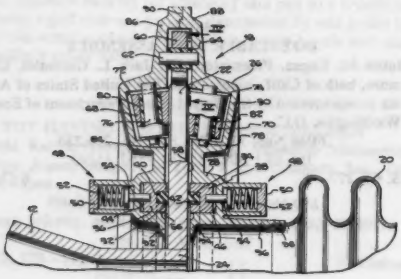
means for preventing air supplied to said gap from entering said openings of said stator and rotor members.

4,361,333

RETORT SEAL MECHANISM WITH INTEGRAL BEARINGS

Donald Firth, Los Angeles, Calif., assignor to Tosco Corporation, Los Angeles, Calif.

Filed Mar. 13, 1981, Ser. No. 243,509
Int. Cl.³ F16J 15/34
U.S. Cl. 277—12 **15 Claims**



1. A retort seal mechanism adapted to seal the rotating vessel portion of a rotating retort to the stationary retort portions, wherein the rotating vessel includes radially extending disc sealing surfaces at each end, said retort seal mechanism comprising:

seal means for sealing the stationary retort portion to the sealing surface of said rotating vessel, said seal means including a seal housing flexibly attached sealingly to the stationary retort portion to allow aligning movement of said seal housing relative said sealing surface, said seal housing having one or more seal elements for sealing to said sealing surface; and

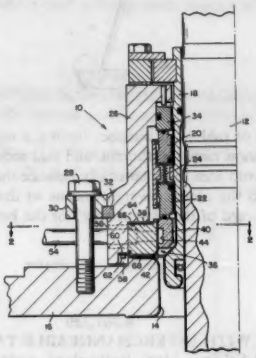
seal alignment means for positioning the seal means in sealing position relative said sealing surface during rotation of the rotating vessel, said seal alignment means including an alignment housing fixed relative said seal means, said alignment housing having sealing surface follower means for continually aligning said alignment housing relative said sealing surface in response to nutations of said sealing surface during rotation of said rotating vessel, said sealing surface follower means including radial positioning means for radially aligning said alignment housing relative said disc and axial positioning means for axially aligning said alignment housing relative said disc, whereby said seal means, being fixed relative said alignment housing, is continually aligned with said sealing surface.

4,361,334

COMPRESSION SEALED COMPOSITE SEAL SEAT WITH COOLING PASSAGES

Franklyn J. Amorese, Hilton; Vincent J. Piarulli, Rochester, and James W. Chapman, Penfield, all of N.Y., assignors to The Pfaudler Co. Inc., Rochester, N.Y.

Filed Nov. 20, 1980, Ser. No. 208,527
Int. Cl.³ F16J 15/16, 15/34
U.S. Cl. 277—16 **9 Claims**



1. A stationary seal seat for a rotating mechanical seal comprising:

(a) a ceramic ring having a groove extending about its outer periphery and an end face which is finished to form a seal face;

(b) a metal mounting ring surrounding and supporting said ceramic ring, said mounting ring being in compression sealed engagement about the periphery of said ceramic ring, the inner periphery of said metal ring extending over said groove to form a closed passage extending around said ceramic ring;

(c) a glass coating on the inner periphery of said metal mounting ring, said glass coating providing a gas tight seal at the metal ring-ceramic ring interface and acting to fuse said ceramic and metal rings together; and

(d) said metal ring having a pair of ports extending inward from the outer periphery thereof and communicating with said passage, one of said ports being a fluid inlet and the second being a fluid outlet.

4,361,335

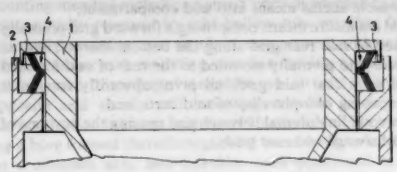
ANNULAR GASKET FOR STATIC SEALING FOR VERY HIGH TEMPERATURES AND SMALL PRESSURE DROPS, AND METHOD OF MAKING

Costantino Vinciguerra, Florence, Italy, assignor to Nuovo Pignone S.p.A., Florence, Italy

Filed Apr. 23, 1981, Ser. No. 257,247
Claims priority, application Italy, May 6, 1980, 21810 A/80
Int. Cl.³ F16J 15/08
U.S. Cl. 277—204 **2 Claims**

1. An annular static sealing gasket for very high temperatures and low pressure differentials, to be inserted in a preloaded condition between two matching mechanical component parts subjected to mutual relative motion due to differential thermal expansions, characterized in that it is comprised of a laminar tape of a work-hardened metallic material which is previously bent and coiled about itself in plural spirals of the desired diameter, the first and the last of such spirals being stitched by rivets or spot-welding, said tape being shaped in the

form of an open V having its concave face pointing towards the outside of said spirals and its apex extending rearwards so



as to form a throat-like recess having a substantially semicircumferential outline.

4,361,336

EPOXY-CONCRETE COATED PIPE

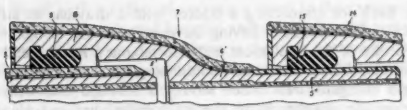
Kurt Reeh, Wettenberg; Hans-Christoph Jerofke, and Friedrich Kramer, both of Wetzlar, all of Fed. Rep. of Germany, assignors to Buderus Aktiengesellschaft, Wetzlar, Fed. Rep. of Germany

Filed Oct. 3, 1980, Ser. No. 193,843

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1979, 2940213; Oct. 4, 1979, 2940214

Int. Cl.³ F16L *11/08*

U.S. Cl. 277—207 A **4 Claims**



1. A pipe comprising:

a tubular metal pipe core having a central portion, one end formed with a spigot and of smaller outside diameter than said central portion, and another end having a bell;

a layer of a two-component epoxy resin directly overlying said core at said central portion, said one end, and said other end, said layer being of greater thickness at said spigot than at said central portion; and

a layer of hydraulic concrete directly overlying said layer of resin at said central portion and said other end only.

4. A pipe assembly comprising:

a tubular metal pipe core having a central portion, one end formed with a spigot and of smaller outside diameter than said central portion, and another end having a bell;

a layer of a two-component epoxy resin directly overlying said core at said central portion, said one end, and said other end, said layer being of greater thickness at said spigot than at said central portion;

a layer of hydraulic concrete directly overlying said layer of resin at said central portion and said other end only and;

a fitting having

a spigot substantially identical to said spigot of said pipe and fitted in said bell, and

at the opposite end a bell similar to said bell of said pipe but having an inside diameter substantially greater than the inside diameter of said pipe and than the outside diameter of the outer surface of said layer of concrete of said central portion of said pipe, whereby if said pipe is cut at its said central portion it can be fitted into the ball of said fitting.

4,361,337

PISTON RING WITH TONGUE AND GROOVE JOINT

Adriel Montes, P.O. Box 39212, Detroit, Mich. 48239

Continuation-in-part of Ser. No. 39,306, May 15, 1979, Pat. No. 4,251,083. This application Feb. 13, 1981, Ser. No. 234,155

The portion of the term of this patent subsequent to Feb. 17, 1998, has been disclaimed.

Int. Cl.³ F16J *9/14*

U.S. Cl. 277—221 **11 Claims**

1. A piston ring comprising an elongated one-piece element having a cylinder contact surface, a side surface extending the length of said element and a pair of relatively movable ends including a first end and a second end, said first end having a groove including a pair of generally opposed walls, said walls being planar and parallel with respect one to the other and being disposed at an angle of about 45° with respect to said ring side surface, the second end being receivable in said groove to prevent relative motion between the ends of the ring in directions normal to said side surface; and structure on said second end engageable with complementary structure on the first end for preventing longitudinal motion of the first end with respect to the second end.

4,361,338

TOY CAR WITH PEDAL DRIVE

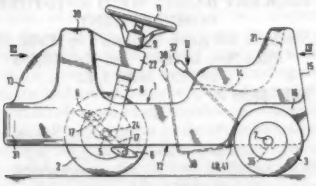
Heinz Kuchenbecker, Parkstr. 17; Hans J. L. Kuchenbecker, Parkstr. 15, and Rolf Kuchenbecker, Parkstr. 17, all of D-5657 Haan 2, Fed. Rep. of Germany

Filed Jul. 29, 1980, Ser. No. 173,662

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1979, 2947365

Int. Cl.³ B62K *5/04*; B62M *1/02*

U.S. Cl. 280—1.11 R **4 Claims**



1. A toy car, comprising in combination,

a single unitary car body of blow-molded plastic material substantially open on top, including an integral interior seat, and having a substantially rectangular contour, and the external configuration of a four-wheeled toy car,

an undercarriage including

three wheels including a front wheel each revolvable about a normally substantially horizontal axis,

a steering mechanism operable for steering said front wheel about an upright axis, and including a steering column, said car body including a stabilizing bead extending upwardly from said car body and comprising an integral bracket in the interior of said car body accommodating said steering column in a forward position of the vehicle,

a pedal drive including freewheeling means, mounted for energizing said front wheel to propel it on the ground, and

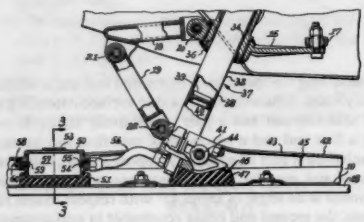
support means disposed intermediate said three wheels and said car body supporting said car body off the ground, said undercarriage extending laterally entirely underneath said car body.

4,361,339

STEERING SKI SUSPENSION FOR SNOWMOBILES

Takashi Kobayashi, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jun. 18, 1980, Ser. No. 160,470
Claims priority, application Japan, Jun. 27, 1979, 54-80241
Int. Cl.³ B62B *13/08, 17/04*
U.S. Cl. 280—21 R **5 Claims**



3. In a steering ski suspension system for a snowmobile, including a frame and a ski to support and steer the frame, said suspension system including a stationary cylinder fixed to said frame, a movable cylinder axially slidably fitted in said fixed cylinder, a rod fixed to said stationary cylinder and carrying a head disposed in said movable cylinder to form a restricted orifice in said movable cylinder to divide it into two portions for containing oil and acting as a shock absorber by restricting axial transfer of oil across said head, the improvement comprising; a rod compensating chamber mounted to said ski adapted to hold gas under pressure a floating piston separating said oil from said gas and a flexible conduit between and interconnecting said rod compensating chamber and the inside of said movable cylinder closest to said ski, said ski being pivotally mounted to said end of said movable cylinder.

4,361,340

GROCERY BASKET WITH ANTI-THEFT COMPARTMENT

Jorge H. Soriano, 608 Kave, National City, Calif. 92050

Filed Nov. 10, 1980, Ser. No. 205,885
Int. Cl.³ B62B *3/02*
U.S. Cl. 280—33.99 A **2 Claims**

1. In a shopping cart having a front and side walls and a bottom, an anti-theft compartment comprising:

(a) a rear grid pivoted at its top about an axis spanning between said side walls;

(b) enclosure means mounted on said grid to define therewith an enclosed compartment for the temporary containment of valuables;

(c) closable access means into said compartment;

(d) said enclosure means comprising a forward grid pivotally linked to said rear grid along the bottom thereof, and an access grid pivotally mounted to the rear of said forward grid such that said grids all pivot upwardly to permit telescoping of a plurality of said carts; and

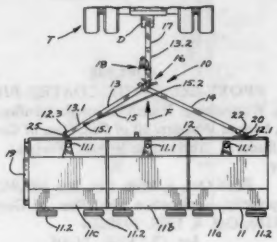
(e) a pivotal link pivotal between and spacing the bottoms of said forward and rear grids.

4,361,341

HITCH FOR DRAFT IMPLEMENT

Wayne Gustafson, Erskine, Minn., assignor to Erskine Manufacturing Company, Inc., Erskine, Minn.

Filed Mar. 24, 1980, Ser. No. 132,841
Int. Cl.³ B62D *53/00*
U.S. Cl. 280—415 R **7 Claims**



1. A hitch for connecting a tractor with a drawbar to an elongate field implement having an evener at the elongate forward side of the implement and also having a leading end adjacent one end of the evener, comprising

a rigid elongate draft frame having a forward end with means for attachment to the tractor drawbar and also having a rear end with means for pivotal connection to said one end of the implement evener, the draft frame being swingable between a field position wherein the draft frame extends generally obliquely forwardly from the evener and a transport position wherein the draft frame extends along the evener and toward and beyond the leading end of the elongate implement,

an elongate draft frame brace with means for pivotal connection to another end of the implement evener opposite said one end thereof, the brace being swingable between a rest position extending along the evener and a field position extending obliquely forwardly from the evener and in converging relation with the draft frame,

operating means connected with both of the draft frame and brace and coordinating swinging of the draft frame from transport position to field position with swinging of the brace from rest position to field position, and

spring-operated latch means on the brace and on the draft frame and connecting the draft frame and brace together when both of the draft frame and brace are swung into forwardly converging relation to each other and their respective field positions.

4,361,342

TOW HITCH ASSEMBLY

Melvern L. Duffield, 3000 S. Prairie Ave., Pueblo, Colo. 81005

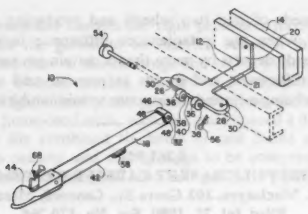
Filed Sep. 29, 1980, Ser. No. 191,946
Int. Cl.³ B60D *1/06, 1/14*
U.S. Cl. 280—491 E **12 Claims**

10. An improved tow hitch assembly for use in connecting a trailer vehicle to a tractor vehicle wherein a first one of said vehicles has a receiving bracket mounted to its frame with the receiving bracket having a hollow tube member positioned

longitudinally along the underside of the vehicle, the improvement comprising:

a mounting member including a shank portion adapted to be telescopically received by said hollow tube member for releasably retaining said shank in engagement with said tube member, said mounting member having a pair of spaced-apart, disc-shaped knuckles on an end thereof opposite said shank, said mounting member having a surface portion between said knuckles, each knuckle having a bore formed therethrough, said bores being oriented on a common axis, said knuckles each positioned in a generally vertical plane when said mounting member is secured to said receiving bracket;

a tow bar having a first end including attachment means for attaching said tow bar to a second one of the vehicles and a second end terminating in a nose portion, said nose portion having a pair of sidewalls spaced-apart a distance



to allow close-fitting insertion of said nose portion between said knuckles, said nose portion having a rounded endwall with a radius of curvature equal to the radius of curvature of each said knuckle and a bore formed transversely therethrough, said bore in the nose portion alignable with the bores in said knuckles whereby said endwall is in closely spaced relation to the surface portion of said bracket and said sidewalls are in closely spaced relation to a flat surface of a respective one of said knuckles whereby the surface of said nose portion endwall may smoothly rotate along said surface portion of said bracket when said tow bar is pivoted in a plane perpendicular to said axis, said knuckles and said nose portion generally prohibiting said tow bar from pivoting in a direction out of said plane; and

releasable connecting pin means adapted for extension through said bores when they are aligned to releasably secure said tow bar to said knuckles.

4,361,343

SKI BRAKE

Max Luitz, Blaichach, Fed. Rep. of Germany, assignor to Firma ESS GmbH & Co., Sonthofen, Fed. Rep. of Germany

PCT No. PCT/DE80/00018, § 371 Date Sep. 9, 1980, § 102(e) Date Sep. 9, 1980, PCT Pub. No. WO80/01651, PCT Pub. Date Aug. 21, 1980

PCT Filed Feb. 20, 1980, Ser. No. 197,104

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1979, 2906477

Int. Cl.³ A63C *7/10*

U.S. Cl. 280—605 **11 Claims**

1. A ski brake comprising:

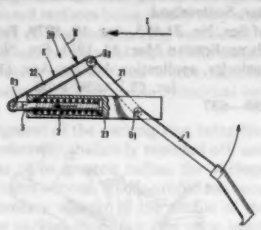
A. at least one brake arm, and

B. a spring loaded, articulated lever system including:

i. a crank that is connected to said brake arm by a first joint,

ii. a coupler that presents a foot element and that is joined to the crank by a second joint, and

iii. a sliding element that is arranged to be spring-loaded in a housing, a portion of the sliding element extending



from an end of the housing and being connected to the coupler by a third joint.

4,361,344

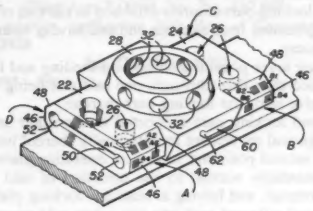
SKI BINDING WITH UNIVERSAL RELEASE

Maury L. Hull, and John E. Ramming, both of Davis, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Aug. 11, 1980, Ser. No. 177,263

Int. Cl.³ A63C *9/08*

U.S. Cl. 280—613 **8 Claims**



1. A ski binding for releasably securing a ski boot to a ski, comprising a circular releasable binding for selectively engaging the ski boot with the ski, said circular releasable binding including a base portion and two circular elements arranged parallel with the plane of the ski, one of said circular elements being mounted to the underside of the boot and the other of said circular elements being mounted on said base portion, said base portion having a pair of slotted portions extending outwardly therefrom, each of said slotted portions being mounted on said ski, said circular elements being nestable one within the other for positioning the boot relative to the ski, detent means being adapted for selective rigid locking engagement between said two circular elements to secure the boot to the ski, locking means for maintaining the detent means in locked engagement between said two circular elements, release actuating means for releasing the locking means to permit disengagement between said two circular elements and to permit release of the ski boot from the ski when necessary in order to minimize or prevent injury by permitting relative motion in any direction between the boot and ski during release,

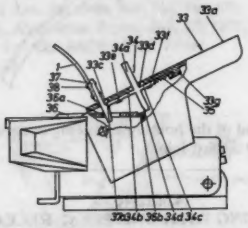
means for measuring deflection in each of said slotted portions and further for developing a plurality of electrical signals commensurate with selected ones of components of deflection about longitudinal, lateral, and vertical axes of said ski,

computing means responsive to said electrical signals for computing angular deflections about selected ones of said axes, said computing means being preprogrammed with predetermined critical angular deflections for computing a relationship between said electrical signals for initiating a release signal to said release actuating means.

4,361,345
SAFETY-STRAPLIKE CONNECTING MEMBER

Josef Svoboda, Schwechat, Austria, assignor to TMC Corporation, Baar, Switzerland

Division of Ser. No. 31,493, Apr. 19, 1979, Pat. No. 4,312,519.
This application Mar. 12, 1981, Ser. No. 243,114
Claims priority, application Austria, Apr. 21, 1978, 2897/78
Int. Cl.³ A63C 9/00
U.S. Cl. 280—637 3 Claims



1. A retaining device adapted for use with a ski having a ski binding mounted thereon releasably securing a ski shoe to the ski, said device comprising:

a safety strap, one end of said safety strap being releasably securable to the leg of a skier;

a first locking part securely attached to the end of said safety strap remote from said one end and having an enlargement thereon;

a release lever provided on said ski binding and having two spaced slots therethrough, one said slot being adapted to receive said first locking part therein;

a second locking part supported in the other said slot for reciprocal movement longitudinally thereof between first and second positions, having an operating plate extending substantially normal to the direction of said reciprocal movement, and having at least one locking plate which is located adjacent said one slot when said second locking part is in said first position and engages said enlargement on said first locking part when said first locking part is received in said one slot to resist withdrawal of said first locking part from said one slot, said second locking part being in a third position intermediate said first and second positions when said locking plate is engaging said enlargement;

resilient means cooperable with said second locking part for urging said second locking part toward said first position; and

means defining a sloped surface on at least one of said enlargement and said locking plate at the point of engagement therebetween;

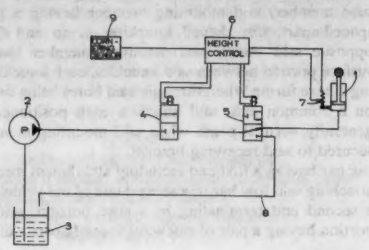
whereby a force of sufficient magnitude exerted through said safety strap on said first locking part will act through said sloped surface means to displace said second locking part toward said second position against the force of said resilient means, thereby disengaging said enlargement from said locking plate and facilitating withdrawal of said first locking part from said one slot.

4,361,346
SUSPENSION SYSTEMS FOR VEHICLES

Alan L. Harris, Coventry, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jan. 26, 1981, Ser. No. 228,586
Claims priority, application United Kingdom, Jan. 26, 1980, 8002697
Int. Cl.³ B60G 11/28
U.S. Cl. 280—707 8 Claims

1. In a vehicle having sprung and unsprung parts, a suspension system comprising at least two suspension units installed on opposite sides of the vehicle and adapted to maintain a suitable height relationship between the sprung and unsprung parts of the vehicle despite changes in vehicle load, respective sensors for sensing the speed of rotation of each of two wheels on opposite sides of the vehicle, means for comparing the

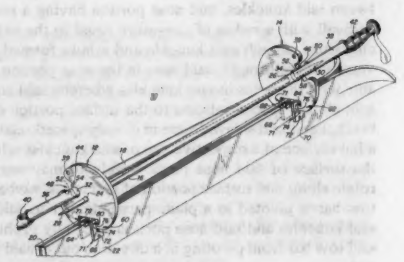


sensed speeds of said two wheels and producing an inhibit command when the instantaneous difference between said sensed speeds departs by more than a certain amount from an expected difference, and means to prevent said suspension units from being adjusted in response to said inhibit command.

4,361,347
SKI POLE BASKET CARRIER SYSTEM

Robert W. MacIntyre, 103 Grove St., Concord, Mass. 01742

Filed Jul. 21, 1980, Ser. No. 170,765
Int. Cl.³ A63C 11/02
U.S. Cl. 280—814 10 Claims



1. A ski pole basket carrier system for carrying a pair of skis and poles as a unit comprising:

first and second pairs of interconnection means, one pair at the forward end and one pair at the rearward end of the skis, said pairs of interconnection means including members having means for attachment to a ski and a hole; and

first and second ski pole baskets, each basket including a mounting hole for engaging the lower end of one ski pole, and at least one recess disposed for releasably receiving the other ski pole; means for securing the other ski pole in said recess; and detent means for releasably engaging a pair of said holes in said interconnection means.

4,361,348
REINFORCED GASKET FOR SEGMENTED HOUSING

Karl Rapp, and Joachim Choschzick, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 15, 1980, Ser. No. 187,060
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939427
Int. Cl.³ F16L 25/00
U.S. Cl. 285—31 7 Claims

1. In ventilating apparatus arranged in aligned housings, a

reinforced gasket for sealing juxtaposed ends of first and second ones of the housings, said gasket comprising:

a rigid closed perimeter frame having two oppositely directed faces and a radially inwardly directed edge that defines an open area; and

toroidal elastomeric sealing rings extending around the opened area on and extending axially outward from said two faces and interlocked with the perimeter frame, each of said sealing rings having a hollow section, so as to be

compressible toward the rigid perimeter frame means to permit the gasket to be inserted between the first and second ones of the housings and to be withdrawn therefrom without moving the first and second ones of the housings, whereby said gasket can be inserted between the two juxtaposed ends, with said ends spaced a distance less than the combined thickness of said frame and sealing rings causing said sealing rings to be compressed to seal against said ends and hold said gasket in place.

4,361,349

RING-PACKED PIPE SPIGOT-AND-SOCKET CONNECTION

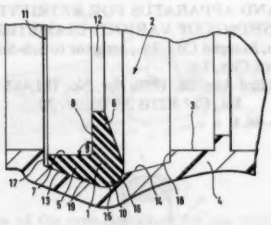
Franz J. Wolf, and Hansjörg Lauer, both of Bad Soden-Salmünster, Fed. Rep. of Germany, assignors to WOCO Franz-Josef Wolf & Co., Bad Soden-Salmüster, Fed. Rep. of Germany

Filed Nov. 24, 1980, Ser. No. 209,702

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1979, 2948736

Int. Cl.³ F16L *17/02*

U.S. Cl. 285—110 **28 Claims**



1. In a ring-packed pipe spigot-and-socket connection in which an elastic packing ring, having a pair of legs defining an essentially V-shaped cross section and including a foot segment lying opposite the angle defined by the two legs, is located in an annular groove provided in the inside wall of a socket in such a way that (a) prior to the insertion of the spigot end, one of the two legs of the V-shaped packing ring has a radially internal surface substantially axially aligned and turned toward the outlet of the socket and the other leg extends substantially radially into the interior of the socket, and (b) after the spigot end has been pushed through the packing ring, the packing ring with its two legs lies against the external wall of the spigot end essentially symmetrically and in sealing fashion, and the foot segment of the packing ring, in the radially outward direction, lies on the bottom of the annular groove in sealing manner, the improvement comprising:

A. the annular groove having the shape of a substantially shallow V-shaped chamber having two slanted surfaces which can substantially accommodate the packing ring when the spigot end has been pushed through the packing ring, the slanted surfaces being axially only slightly longer than the legs of the packing ring associated with them, respectively, and on the axial ends of said surfaces a pair of radially circular ring surfaces whose radially inwardly extending edge is defined by the cylindrical inside wall of the socket;

B. the foot segment of the packing ring being formed toroidally and relatively shallowly rounded off; and

C. in the zone of its greatest radius, the V-shaped annular groove includes a recess whose profile has been formed in a complementary manner to the profile of the foot segment of the packing ring such that upon insertion of the spigot into the socket the packing ring rotates relative to the socket and the foot segment of the packing ring is blocked against axial displacement and accommodated in a flexible manner to provide a seal therebetween.

4,361,350

SECURING DEVICE FOR A HOUSING COVER ELEMENT, ESPECIALLY FOR SWITCH BOXES HAVING ELECTRICAL SWITCHING DEVICES

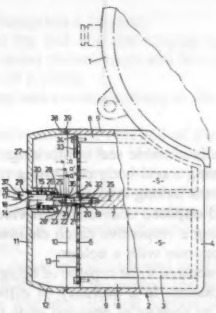
Herbert Palloch, Schwetzingen, and Hans Erndt, Wiesloch, both of Fed. Rep. of Germany, assignors to Frankl & Kirchner GmbH & Co. KG, Fabrik für Elektromotoren u. elektrische Apparate, Schwetzingen, Fed. Rep. of Germany

Filed Apr. 7, 1980, Ser. No. 137,893

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1979, 2913938

Int. Cl.³ E05C *5/04*

U.S. Cl. 292—251 **10 Claims**



1. An improved arrangement for securing a cover to a housing, especially a cover for a box housing electrical devices, at least one screwable element, said cover being formed with an indentation for each said screwable element, each said indentation comprising a bottom wall formed with an opening to receive a said screwable element, compression spring means disposed in said indentation between a shoulder formed on said screwable element and said indentation bottom wall for normally urging said screwable element outwardly of said indentation and away from said housing, and said screwable element comprising stop means to limit the motion of said screwable element out of said indentation and to hold said screwable element captive in said indentation, the improvement comprising a threaded pin having a first portion secured to said housing and a second portion adapted to cooperate with said cover, said screwable element comprising a pressure face formed at its free end at the inside of said cover, a structural part secured to said housing, said pressure face of said screwable element being adapted to bear against said structural part in the secured together condition of said cover on said housing, said threaded pin comprising a third portion comprising a centering body

which mates with a suitably formed opening in said structural part in the correctly assembled together conditions of said structural part in said housing and of said cover on said housing, and said screwable element comprising a shaft nut for engaging said threaded pin second portion against the force of said compression spring means for removably securing said cover on said housing.

4,361,351

MANUALLY CLOSABLE SEAL

Walter Spirig, Diepoldsau, Switzerland, assignor to Stoba AG, Horn, Switzerland

Filed Jun. 9, 1980, Ser. No. 157,665

Claims priority, application Switzerland, Jun. 29, 1979, 6080/79

Int. Cl.³ B65D *33/34*

U.S. Cl. 292—321 **8 Claims**

1. A manually closable seal comprising:

means defining a seal body containing therein a channel;

a strip element having symmetrically formed opposed ends;

each of said opposed ends being provided with an opening constituting a respective catch element intended to lockingly cooperate with a holder;

a holder structured to be capable of being correctly mounted in said channel in a plurality of different positions and intended to receive at opposed ends thereof, in coacting relationship therewith, one opposed end of each of said opposed ends of said strip element;

said holder comprising a substantially U-shaped metallic element having symmetrically arranged oppositely situated leg members;

said metallic element of said holder having opposed holder ends;

resilient tongues provided at each of said leg members and extending away from said holder ends towards a central region of said holder and at an inclination with respect to the oppositely situated leg member, so as to form two symmetrical pairs of tongues at the opposed ends of the holder;

each pair of tongues comprising two tongues extending from said oppositely situated leg members of the holder and crossing each other at said central region;

each of said pairs of resilient tongues constituting an irreversible locking element for one of the catch elements of the strip element which is introduced from opposite sides into the channel of the seal body between the leg members of the holder independently of the position of the holder in the body.

4,361,352

BUMPER FOR VEHICLES

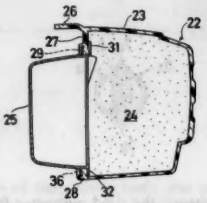
Fumio Wakamatsu, Okazaki, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 12, 1980, Ser. No. 148,725

Claims priority, application Japan, May 21, 1980, 54/062462

Int. Cl.³ B60R *19/08*

U.S. Cl. 293—120 **6 Claims**



1. A bumper for vehicles comprising:

a molded plastic rim member formed from setting of molten material as a result of a molding operation,

a foamed urethane form positioned within said rim member to absorb shocks to which the bumper may be subjected, and

a reinforcement member to reinforce the bumper positioned rearwardly of said foamed urethane form and affixed to said rim member when the latter is formed, said reinforcement member having two flanges which define a groove therebetween, the upper portions of said two flanges having projections which form a narrowed portion in said groove, at least one of said two flanges defining at least one aperture which connects to said groove for passing molten material therethrough and into said groove to form said rim member, whereby said rim member and said reinforcement member are integrally fixed to each other upon setting of the molten material.

4,361,353

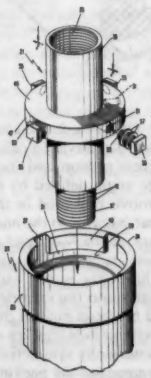
METHOD AND APPARATUS FOR RETRIEVING WEAR BUSHINGS OF VARIOUS DIAMETERS

Joe D. Vinson, Morgan City, La., assignor to Sub-Surface Tools, Inc., Morgan City, La.

Filed Aug. 26, 1980, Ser. No. 181,403

Int. Cl.³ E21B *23/00, 31/20*

U.S. Cl. 294—86.1 **17 Claims**



1. A wear bushing retrieving tool for use in removing wear bushings of different diameters, said wear bushings including

slot means for engaging a portion of the retrieving tool, said tool comprising:

an elongated member having first and second ends;

said elongated member having a generally cylindrical outer peripheral portion arranged along at least a segment of the length of the elongated member which cylindrical portion is parallel to and extends radially outwardly from a longitudinal axis of the elongated member; and

a plurality of adjustable means adapted for engaging slot means provided in a wear bushing, said plurality being selectively variable in quantity, each of said adjustable means being arranged at the cylindrical outer peripheral portion of the elongated member, each of said adjustable means having an adjustable outward extension from the cylindrical outer peripheral portion generally along an extension of a radius of the cylindrical portion, the outward extension of each of said adjustable means being adjustable prior to a single use of the tool between a location closely adjacent the cylindrical portion and a location spaced from the cylindrical portion such that the effective diameter of the plurality of adjustable means corresponds to the diameter of the slot means of the wear bushing to be retrieved, said outward extension of the adjustable means being greater than an outward extension of any portion of the tool cooperating with the wear bushing and being a predetermined fixed distance which is substantially invariable during the signle use of the retrieving tool.

4,361,354

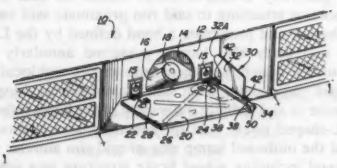
DOOR HOLDING DEVICE

Merle L. Kemp, Jr., 44 Locust St., Prophetstown, Ill. 61277

Filed Nov. 10, 1980, Ser. No. 205,732

Int. Cl.³ B62D *25/00*

U.S. Cl. 296—1 C **5 Claims**



1. A device of the type described for use with a plate-like door hingedly mounted to an automotive vehicle for movement between a closed position covering the fuel fill port of the vehicle and an open position exposing the port, comprising

a base member having means thereon for attaching said base member to said plate-like door,

said base member having a portion disposed on the rear side of said door,

a stop member hingedly mounted to said portion of said base member for movement between a first position wherein it lies substantially coplanar with said door and a second position wherein it lies substantially perpendicular to the plane of said door,

said stop member having a flat edge surface which abuts said base member when said stop member is in said second position, and

spring means resiliently urging said flat edge surface against said base member to prevent spurious movement of said stop member out of said second position.

4,361,355

PARKING TICKET COLLECTION APPARATUS

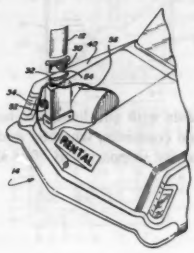
Louis Wise, Homewood, and James E. Voves, Chicago, both of Ill., assignors to Jeffrey M. Morris, Chicago, Ill.

Continuation of Ser. No. 108,943, Dec. 31, 1979, Pat. No. 4,262,957. This application Dec. 8, 1980, Ser. No. 214,447

The portion of the term of this patent subsequent to Apr. 21, 1998, has been disclaimed.

Int. Cl.³ B60R *5/00*

U.S. Cl. 296—37.1 **7 Claims**



1. A parking ticket apparatus adapted for use with a motor vehicle, said apparatus comprising:

container means for holding at least one ticket;

said container means comprises a mid-portion, a first portion extending longitudinally from said mid-portion in one direction and a second portion extending longitudinally from said mid-portion in another direction, opposite said one direction;

said first portion comprises a top end;

slot means on said top end of a size adapted to permit the insertion of the ticket therethrough and having a configuration of an arc of a circle;

means for mounting said container means to the motor vehicle;

means normally preventing the removal of the ticket from said container means after it has been received therein;

ticket-guiding means comprising a mid-portion, a first portion extending longitudinally from said mid-portion in one direction and a second portion extending longitudinally from said mid-portion in another direction, opposite said one direction; and,

said ticket-guiding means of a size adapted to fit into said slot means and into said top end for guiding the ticket into said container means whereby said first portion of said ticket-guiding means extends above the top end and said second portion of said ticket-guiding means extends below the top end.

4,361,356

DUAL USE CUSHION AND CONTAINER

Abraham L. Tunick, Rock Island, Ill., assignor to Karmelkorn Shoppes, Inc., Rock Island, Ill.

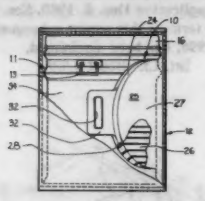
Filed Oct. 27, 1980, Ser. No. 201,012

Int. Cl.³ A47C *13/00*

U.S. Cl. 297—129 **9 Claims**

1. A dual use cushion and container, comprising a container having a flat top portion spaced above its bottom and at least one handle, and a cushion having a flexible seat portion substantially as large as the top of said container, said cushion having a retaining tab extending to one side of said seat portion, said retaining tab having an opening for cooperating with said handle to hold said cushion on top of said container, said cushion and container having first positions with said cushion adjacent said container, said cushion and container when in said first position being adapted to be placed within a shipping carton for shipment of a product in said container and said cushion cushioning said container for shipment, and after

shipment said cushion and container having second positions with said cushion placed on top of said container to provide a cushioned seat, said retaining tab being movable to a position with said opening therein adjacent said handle, said retaining



tab being engageable with said handle to hold said cushion in place on top of said container, whereby said cushion and container can be used for shipping and after shipping to form a cushioned seat.

4,361,357

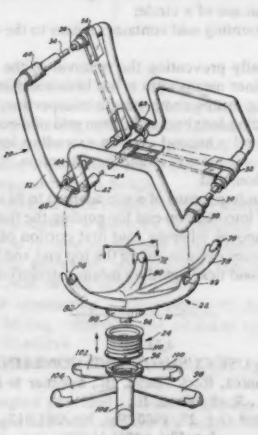
CHAIR

Charles R. Pollock, 34-24 86th St., Jackson Heights, N.Y. 11372

Filed Apr. 21, 1980, Ser. No. 142,249

Int. Cl.³ A47C *3/00*

U.S. Cl. 297—297 **7 Claims**



1. A chair structure including in combination a first rod within an elastomeric tubular member bent into configuration to provide a frame of said chair, a rod means bent into the configuration of a spider with arms engaging and supporting said first rod and pedestal support means supporting said second rod above an underlying surface a third rod attached to and supported by said first rod transverse of said frame and seat and back members respectively supported by said first rod and said third rod, and in which said third rod has first and second parallel legs, said first leg and said first rod supporting said seat member and said second leg and said first rod supporting said back member.

4,361,358

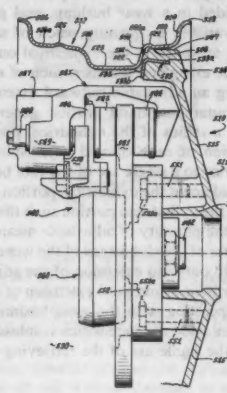
WHEEL DISC OFFSET ATTACHMENT TO WHEEL RIM

Joel C. Bonniwell, Hawthorne, and William A. Ocheltree, Van Nuys, both of Calif., assignors to Cragar Industries Inc., Compton, Calif.

Continuation-in-part of Ser. No. 176,083, Aug. 7, 1980. This application Dec. 8, 1980, Ser. No. 214,177

Int. Cl.³ B60B *23/00*

U.S. Cl. 301—6 E **13 Claims**



1. In combination with a metallic wheel rim adapted to mount a tire, the rim having an inboard hump, a well portion, an outboard hump, an outboard bead seat portion at the outboard side of the outboard hump, and an annular wall between said well portion and said outboard hump,

(a) a wheel body having a radially thickened annular outer portion extending about an axis defined by the body,

(b) said body outer portion having a first annularly extending surface which faces radially outwardly and locally interfits a radially innermost crest of said outboard hump and beadseat portion at the radially inner side thereof,

(c) generally L-shaped insert means on said body outer portion attaching to said rim proximate said annular wall thereof and proximate a bend defined by the L-shape,

(d) said body also having a second annularly extending surface which faces generally axially and locally interfits said rim annular wall, said second surface located proximate to and radially outwardly of the bend defined by said L-shaped insert, said thickened annular portion confined at the outboard hump side of said rim annular wall,

(e) and including wheel brake structure in a zone radially bounded by the rim outboard hump and by said thickened annular portion and insert, the wheel body axially offset from said brake structure.

4,361,359

WHEEL COVER FOR A PASSENGER MOTOR VEHICLE

Hartmut Binnewies, Wolfschlugen, and Bernd Löper, Korb, both of Fed. Rep. of Germany, assignors to Daimler-Benz A.G., Stuttgart, Fed. Rep. of Germany

Filed Dec. 1, 1980, Ser. No. 211,903

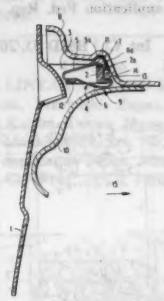
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1979, 2948448

Int. Cl.³ B60B *7/06*

U.S. Cl. 301—37 PB **14 Claims**

1. A wheel cover for wheels of a passenger motor vehicle, the wheel cover including means for mounting the wheel cover to a wheel of the vehicle, the mounting means includes a plurality of retaining means located on the wheel cover, and locking elements adapted to engage in a recess of a rim of the wheel, characterized in that the retaining means further includes a bearing means associated with each locking element

and adapted to be supported at a dish of the wheel, each of the retaining means are formed as a U-shaped retaining spring, the locking elements are formed by a radially outer leg of the retaining spring, the bearing means are formed by a radially inner leg of the retaining spring, the radially inner leg being adapted to press against a radially outwardly directed surface of the dish of the wheel, the radially inner and radially outer legs of each of the retaining springs respectively extend over a



radially inner and a radially outer surface of the retaining ring, means are provided at the free ends of the respective legs for engaging the retaining ring, means are provided in the retaining ring for accommodating the engaging means including an axially extending groove having a predetermined width so as to enable a radial spring action of the legs of the retaining spring which is sufficient for the engaging means to contact inner walls of the axially extending grooves.

4,361,360

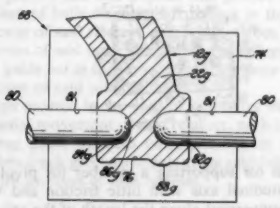
TUBE END FORGING PROCESS

Siegfried Kuether, 1199 Front Rd., La Salle, Ontario, Canada, assignor to Siegfried Kuether, Rochester, Mich.

Filed Mar. 5, 1979, Ser. No. 17,502

Int. Cl.³ B60B *35/08*

U.S. Cl. 301—127 **3 Claims**



1. A process for making a solid end tube from a tube with a hollow end of a round shape, the process comprising: moving a closed die having a round opening including a semispherical inner end in a rectilinear path without rotation toward the hollow tube end to axially forge said tube end within the die opening to a solid condition while maintaining the roundness thereof and concomitantly forging a distal semispherical shape.

4,361,361

DUAL-CIRCUIT PRESSURE CONTROL VALVE FOR HYDRAULIC BRAKE SYSTEMS

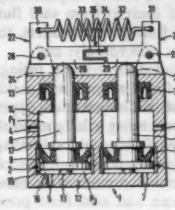
Bernd Schopper, Hattersheim, and Peter Tandler, Falkenstein, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Apr. 10, 1981, Ser. No. 253,122

Claims priority, application Fed. Rep. of Germany, May 9, 1980, 3017728

Int. Cl.³ B60T *8/02*

U.S. Cl. 303—6 C **3 Claims**



1. A dual-circuit pressure control valve for a hydraulic brake system comprising:

two control pistons disposed in parallel side by side relationship, each of said two pistons having a longitudinal axis and being assigned to a different brake circuit;

two angular levers disposed at least approximately in a plane defined by said longitudinal axes of said two pistons, each of said two levers being tiltable around a different one of two tilting axes disposed perpendicular to said plane and disposed outside said longitudinal axes of said two pistons, each of said two levers including a first arm disposed adjacent each other acting directly upon an associated one of said two pistons and a second arm disposed perpendicular to said first arm adjacent an associated one of said two tilting axes; and

only a common tension spring disposed between said two second arms to generate a preloading force for said two pistons.

4,361,362

ADAPTER FOR TESTING FOR LEAKAGE IN BRAKE FORCE REGULATING DEVICES IN FLUID PRESSURE OPERABLE BRAKE SYSTEMS

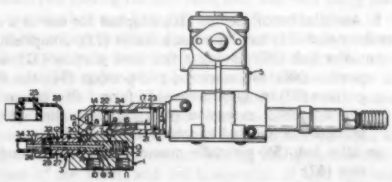
Gerhard Fauck, Hanover, Fed. Rep. of Germany, assignor to Wabco Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Jan. 9, 1981, Ser. No. 223,871

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1980, 3001679

Int. Cl.³ B60T *8/22*

U.S. Cl. 303—22 A **4 Claims**



1. An adapter for use in a fluid pressure operable brake system, including a vehicle load-responsive brake force regulator, for checking said brake force regulator for fluid pressure leakage, said brake force regulator having a pair of fluid pressure connections to air springs on opposite sides of the vehicle

and operable responsively to the vehicle load condition for determining the degree of brake force, said adapter comprising:

(a) a housing securable to said brake force regulator;

(b) an axially movable hollow stem longitudinally disposed in said housing and having a coaxially disposed longitudinal passageway, closed at one end, formed therein;

(c) a spring disposed in said housing for biasing said hollow stem toward a first communicating position in which said fluid pressure connections are communicated with a pair of fluid pressure inlets formed in the brake force regulator;

(d) an operating piston operably disposed in the brake force regulator and operable responsively to fluid pressure communicated thereto from said fluid pressure connections, via said fluid pressure inlets, for setting said brake force regulator accordingly; and

(e) a screw-threaded connection fitting screwable onto an exterior end of said adapter and making abutting contact with the end of said hollow stem opposite said closed end,

(f) said hollow stem being axially movable, upon screwing of said connection fitting onto said adapter, out of its said first communicating position to a second communicating position in which communication between said fluid pressure connections and said fluid pressure inlets is interrupted, and said fluid pressure inlets are communicated, via a pair of transverse passageways in said stem, with said longitudinal passageway,

(g) said longitudinal passageway being connectable to an independent source of test pressure for charging said brake force regulator and adapter to determine the presence of leakage.

4,361,363

IDLER-ROLLER RECOIL DEVICE

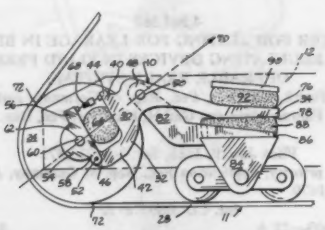
Richard E. Livesay, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/01550, § 371 Date Nov. 19, 1980, § 102(e) Date Nov. 19, 1980, PCT Pub. No. WO82/01693, PCT Pub. Date May 27, 1982

PCT Filed Nov. 19, 1980, Ser. No. 273,879

Int. Cl.³ B67D *55/10*

U.S. Cl. 305—22 **18 Claims**



1. An idler recoil device (10) adapted for use in a crawler track system (11) having a track frame (12), comprising:

an idler link (30) having a first end portion (32), a center portion (48), and a second end portion (34), the first end portion (32) being bifurcated to form a first extension (40) and a second extension (42), said idler link (30) being pivotally connected to said track frame (12);

an idler hub (54) pivotally connected to said second extension (42);

an idler (24) rotatively mounted on said idler hub (54);

first resilient means (66) for biasing said idler (24) outwardly from said first extension (40), said first resilient means (66) being positioned between said first extension (40) and said idler hub (54);

second resilient means (90,92) for resiliently resisting upward movement of the idler link second end (34); and

third resilient means (82,84,88) for resiliently resisting downward movement of the idler link second end (34).

4,361,364

MASTER LINK FOR TRACK CHAIN

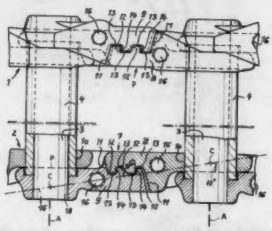
Hansjoachim Brunn, Damme, Fed. Rep. of Germany, assignor to Firma Intertrac Viehmann & Co., Gevelsberg, Fed. Rep. of Germany

Filed Oct. 15, 1980, Ser. No. 197,124

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1980, 3013026

Int. Cl.³ B62D *55/20*

U.S. Cl. 305—58 R **10 Claims**



1. In a track chain having a master link joining together parallel axis-defining shafts and wherein said master link has a pair of like link parts each mounted on a respective shaft and pivotal about its axis, said link parts having axially confronting inner faces formed with meshing teeth, the improvement wherein:

each of said teeth has an inner flank facing back toward the respective shaft, flatly engaging the inner flank of the respective tooth of the other link part, and forming with the axis of the respective shaft an acute angle inclined relative to the respective axis such that forces urging said shafts radially apart have at said inner flanks components urging said parts axially together.

4,361,365

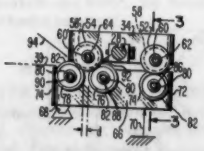
KNIFE EDGE BEARING SYSTEM

Albert L. Witchey, Robbinsville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 2, 1980, Ser. No. 183,621

Int. Cl.³ F16C *32/02*

U.S. Cl. 308—2 R **12 Claims**



1. A system for supporting a member for pivotal motion about a longitudinal axis with little friction and with little tendency for movement along the length of the axis, comprising:

a support which is fixed relative to said axis;

a first set comprising two circular disks secured to one of said member and support, said two disks lying in a plane and being spaced apart edge-to-edge, and

a second set comprising three circular disks secured to the other of said member and support, the disks of one set each being formed with a circumferential knife edge, and

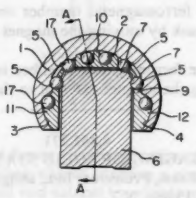
the disks of the other set each being formed with a circumferential edge portion against which the knife edge of a disk in the one set bears when the two disks meet, edge-to-edge, the disks of said second set being spaced apart edge-to-edge and lying in said plane, the spacing between the disks in the second set being such that one disk of the first set bears against a pair of adjacent disks in the second set edge-to-edge, and the other disk of the first set bears against the third disk of the second set edge-to-edge, the points of contact of the first with the second set of disks lying on said axis.

4,361,366

TRACK GUIDE LINEAR MOTION BEARING DEVICE

Masayuki Uchiyama, Maebashi, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 3, 1981, Ser. No. 239,901
Claims priority, application Japan, Mar. 5, 1980, 55-26592
Int. Cl.³ F16C *29/04;* F16D *3/06*
U.S. Cl. 308—6 C **4 Claims**



1. A track guide linear motion bearing device comprising:
an outer sleeve having three no-load ball guide grooves formed in the axial inner surface thereof having a substantially C-shaped cross-section and two ball rolling grooves formed between said no-load ball guide grooves, said grooves extending over the entire axial length of said outer sleeve;
a square elongated guide bar provided, in both upper corner portions thereof, with axially extending ball guide grooves corresponding to the ball rolling grooves of said outer sleeve;
a retainer loosely fitted between said guide bar and said outer sleeve, said retainer being formed in the outer surface thereof with a plurality of outwardly opening endless track grooves each comprising a load side groove having an inwardly extending portion in the portion corresponding to the ball rolling groove of the outer sleeve, a no-load side groove formed in the portions corresponding to the no-load ball guide grooves of said outer sleeve, and a U-turn groove smoothly connecting the ends of said load side groove and said no-load side groove to each other;
a number of balls disposed for rolling in the endless track grooves of said retainer and held between the ball rolling grooves of said outer sleeve and the ball guide grooves of said guide bar in the through-hole portions of the load side grooves of said retainer; and
end caps secured to the ends of said outer sleeve to restrain the axial movement of said retainer, each of said end caps having guide surfaces corresponding in number to the endless track grooves which guide said balls rolling in the U-turn grooves of said retainer.

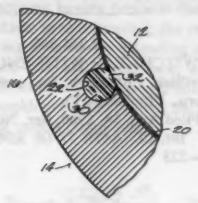
4,361,367

SELF LUBRICATING BEARING

Robert G. Statz, 2478 N. 66th St., Milwaukee, Wis. 53213

Filed Apr. 16, 1981, Ser. No. 254,942
Int. Cl.³ F16C *33/10*
U.S. Cl. 308—78 **5 Claims**

1. A self lubricating bearing comprising: a bearing member body comprised of sintered powdered metal, a bore through said body and defining a cylindrical wall, a plurality of cavities formed in said wall, said cavities extending into said bearing member body, said cavities being spaced equally around said bore, a bearing shaft housed in said bore and being supported



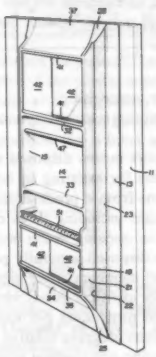
by said bearing material, a bearing member in each of said cavities and extending radially inwardly with respect to the longitudinal axis of the bore from said cavities into said bore to engage said shaft, said bearing members comprising an oil impregnated polymer.

4,361,368

STORAGE UNIT

Phillip D. Daniels, 4797 Lake Bluff, West Bloomfield Township, Pontiac County, Mich. 38033

Filed Aug. 22, 1980, Ser. No. 180,345
Int. Cl.³ A47F *5/08;* A47G *29/00*
U.S. Cl. 312—138 R **10 Claims**



4. A storage unit for application to a planar support surface comprising an initially planar, unitary sheet of thermoplastic material which has been thermoformed to provide a pair of laterally spaced vertical side rails and a plurality of parallel horizontal ribs joining the side rails, said side rails being parallel to one another and being deflected from the plane of the sheet to extend vertically throughout the vertical dimension of said sheet, said rails each having a vertical intermediate portion, a concave upper end portion and a concave lower end portion, said ribs having their ends joined to the rails respectively, the uppermost of said ribs being located substantially at the juncture of the rail upper and intermediate portions and having an upper concave surface joining the uppermost rib to the plane of the sheet, and the lowermost of said ribs being located substantially at the juncture of the rail lower and intermediate portions and having a lower concave surface joining the lowermost rib to the plane of the sheet, said upper concave surfaces of said rails and of said uppermost rib serving as tension members supporting said rails, said ribs and any load thereon, and said lower concave surfaces of said rails and said lowermost rib serving as a compression strut supporting said

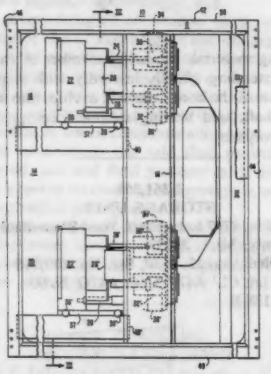
rails, said ribs and any load thereon, said rails and said ribs being formed entirely on one surface of said sheet, with the planar portions of the reverse surface of said sheet being adapted to have adhesive applied thereto for adhering said sheet to a planar support surface.

4,361,369

SWITCHGEAR WITH ENCLOSURE

Alexander Zwillich, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 14, 1980, Ser. No. 178,048
Int. Cl.³ A47B 77/08; E04C 1/10
U.S. Cl. 312—223 **13 Claims**



4. Switchgear, comprising:

circuit interrupting means for controlling an electrical circuit;

skeleton support means disposed around said circuit interrupter means for assisting in isolating said circuit interrupter means from a predetermined region, said skeleton support means including three channel members each of which has an opening in the periphery thereof, and each of which is disposed generally perpendicular to the other two channel members at an apex region; and

three generally identical gusset members each of which has two resilient protruding portions thereon which are oriented at ninety degrees relative to each other, each said opening having one resilient portion on one of said gusset members extending therethrough in combination with only one resilient portion of another of said gusset members in said apex region to bear between internal surface regions of said channel member in a state of compression to align the remainder of each gusset member in a disposition which places all three gusset members in a corner arrangement in said apex region.

4,361,370

APPARATUS AND METHOD FOR CLEANING SHADOW MASKS IN COLOR PICTURE TUBES

Karl G. Hernqvist, Princeton, and Donald C. Pultorak, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 30, 1980, Ser. No. 192,365
Int. Cl.³ H01J 9/00
U.S. Cl. 316—2 **6 Claims**

1. In a shadow mask type color picture tube, the improvement comprising means for cleaning said shadow mask including

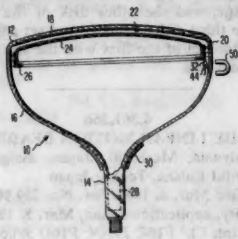
a ferromagnetic member located within the tube and

means for releasably holding said ferromagnetic member in a storage portion within the tube.

6. A method for cleaning particles from a shadow mask of a completed color picture tube comprising the steps of

removing a ferromagnetic member from a holding means located within the completed color picture tube by moving a magnet external to the tube,

relocating the ferromagnetic member to the shadow mask,



moving the ferromagnetic member over a surface of the shadow mask by moving the magnet external to the tube, and

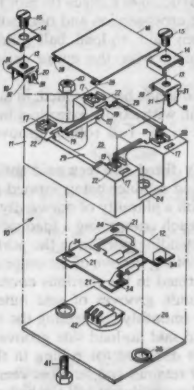
replacing the ferromagnetic member in the holding means by moving the magnet external to the tube.

4,361,371

PACKAGING OF SOLID STATE RELAY

Charles N. Williams, Princeton, Ind., assignor to AMF Incorporated, White Plains, N.Y.

Filed Dec. 8, 1980, Ser. No. 213,775
Int. Cl.³ H01R 9/09, 9/18
U.S. Cl. 339—17 R **6 Claims**



1. A dual function electrical terminal connector and mounting bracket for a solid state relay package, in combination comprising:

a housing having side wall means, a top member having a plurality of slot means and an opening extending into the interior of the housing, and a bottom plate member;

a solid state relay circuit board having a plurality of slot means;

a plurality of electrical terminal connectors each having a flat base member disposed on said top member whereby each said base member having a first end portion with barb means force fitted into a respective slot means of the housing for providing a securing connection therebetween, a second end portion extending through said opening into the interior space of said housing and having a serpentine shaped pig-tail means extending through a

respective slot means in said relay circuit board and being deformable for engaging said board providing a securing connection therebetween and a threaded attachment means located between said first and second ends;

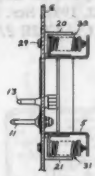
whereby each terminal connector provides a mechanical connection between the housing and said relay circuit board.

4,361,372

CONNECTOR PANEL FOR AN ELECTRONIC CABINET

Charles P. Majkrzak, Nutley, and Thomas R. Phillips, Upper Montclair, both of N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sep. 25, 1980, Ser. No. 191,040
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—64 M **38 Claims**



1. An arrangement for an electronic cabinet having at least one removable electronic chassis enabling n plugs mounted on one of said chassis and said cabinet to reliably engage n receptacles mounted on the other of said chassis and said cabinet, where n is a natural number including one, comprising:

a cabinet connector panel having at least one opening therein;

a floating connector plate carrying one of said n plugs and said n receptacle, said plate being disposed in said opening to enable each of said one of said n plugs and said n receptacles to engage an associated one of the other of said n plugs and said n receptacles; and

preloaded spring means connected between said panel and said plate enabling axial and radial displacement of said plate with respect to said panel to compensate for manufacturing tolerances of said cabinet, said chassis, said n receptacle and said n plugs and thereby ensuring a reliable engagement of said n plugs with said n receptacles;

said preloaded spring means including

a pair of stiffening members each secured to said panel adjacent opposite sides of said opening parallel to each other,

at least one preloaded spring cell secured to each of said pair of stiffening members to establish a predetermined axial force at which said axial displacement can take place, and

a plurality of floating members each rigidly secured to said plate and movably secured to an associated one of said spring cells to enable said radial displacement and to enable said axial displacement when said predetermined force is exceeded.

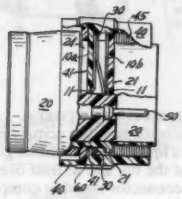
4,361,373

ELECTRICAL CONNECTOR COMPRISED OF PLASTIC

David O. Gallusser, Oneonta; Valentine J. Hemmer, Sidney, and Gary C. Toombs, Oneonta, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Nov. 14, 1980, Ser. No. 206,794
Int. Cl.³ H01R *13/639*
U.S. Cl. 339—89 M **5 Claims**

1. In combination with an electrical connector of the type having: a cylindrical housing comprised of plastic and having a central axis, a forward portion, a central portion, a rear portion, an annular groove in said central portion, and an annular shoulder spaced forwardly of said groove; a plurality of electrical contacts mounted in said housing, each of said contacts having a forwardly facing mating portion; a coupling ring telescoped over a portion of said housing, said coupling ring having a rear portion and a forward portion adapted to connect to a similar housing having contacts that are adapted to mate with said contacts in said housing, the rear portion of said coupling ring having an inwardly extending annular flange that includes a forward face and a rear face; and means for rotatably mounting said coupling ring to said housing between the groove and the shoulder of said housing, the improvement wherein said mounting means comprises;



a snap ring located in the groove in said housing, one side of said snap ring abutting the rear face of said coupling ring flange;

a wave washer located between the forward face of said coupling ring flange and the shoulder of said housing;

a metal washer positioned against the rear face of said housing shoulder; and

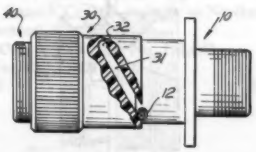
means for preventing relative movement between the metal washer and the shoulder of the plastic housing, said means including at least one axial projection on said metal washer extending towards the rear face of said housing shoulder to fixedly position the washer against the rear face.

4,361,374

ELECTRICAL CONNECTOR BAYONET COUPLING PIN

David J. Marmillion, Bainbridge; Alan L. Schildkraut, Sidney, and David O. Gallusser, Oneonta, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Nov. 14, 1980, Ser. No. 206,772
Int. Cl.³ H01R *13/639*
U.S. Cl. 339—90 R **6 Claims**



1. In combination with an electrical connector of the type having: a molded plastic housing having a central axis, a forward mating portion and a rear portion; the improvement wherein said housing includes:

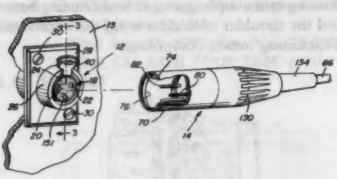
a plastic member integral with said housing and projecting radially outwardly from the outside surface of the forward mating portion of said housing; and

a thin metal sleeve fixedly mounted around said radially projecting member.

4,361,375
MINIATURE AUDIO CONNECTOR

James R. Bailey, Chicago, and John R. Herron, Park Ridge, both of Ill., assignors to Switchcraft, Inc., Chicago, Ill.

Filed Sep. 15, 1980, Ser. No. 187,287
Int. Cl.³ H01R 13/629
U.S. Cl. 339—91 R 8 Claims



1. An audio connector comprising:

(a) a first connector member comprising: a sleeve-like housing having a lip and a polarization groove passing through a portion of the lip; and at least one electrical conductor;

(b) a second connector member comprising:

(i) a post-like housing having a longitudinal portion;

(ii) at least one electrical conductor adapted to contact the electrical conductor of the first member;

(iii) a mounting member comprising a collar and plate member, said post-like housing of said second member being disposed within said collar member;

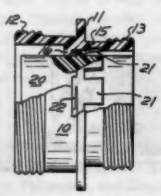
(iv) a mechanical latching system carried by said longitudinal portion of the post-like housing including a unitary resilient tongue-like latch member with intermediate offset wing-like members, said tongue-like member being slidably disposable within said polarization groove and such wing-like members being engageable with the lip of the first member to interlock the first and second members when said first member is mated with said second member; and

(v) a release mechanism cooperating with said tongue-like latch member including a lever slidably disposed between the collar member and longitudinal portion of the second member.

4,361,376
ELECTRICAL CONNECTOR

David O. Gallusser, Oneonta; Valentine J. Hemmer, Sidney, and Gary C. Toombs, Oneonta, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Nov. 14, 1980, Ser. No. 206,769
Int. Cl.³ H01R 13/46
U.S. Cl. 339—140 C 6 Claims



1. An electrical connector of the type having a housing, an insert having a plurality of passages, a plurality of electrical contacts disposed within a respective passage in said insert, and means for mounting said insert within said housing characterized by:

a groove on the inside of said housing said groove having a bottom surface and a first side surface adjacent said bottom surface;

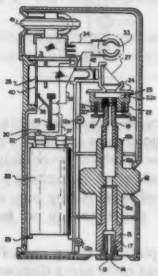
a plurality of resiliently and radially deflectable fingers disposed on the outside of said insert, each of said fingers disposed in the groove in said housing so that the end thereof abuts the first side surface of said groove; and

a second plurality of resiliently and axially deflectable fingers disposed on the outside of said insert adjacent said first plurality of fingers, each of said fingers disposed in the groove in said housing so that one surface of each fingers abuts a second side surface in said groove opposite the first side surface.

4,361,377
PORTABLE COMPACT MICROSCOPE

Joel F. Pullen, Rte. 1, 83B Lupine La., Templeton, Calif. 93465

Filed Jan. 12, 1981, Ser. No. 224,054
Int. Cl.³ G02B 21/06
U.S. Cl. 350—8 6 Claims



1. A compact portable microscope for vertical viewing of slides comprising;

a. a generally rectangular housing divided into a lower base section and an upper cover section, said sections being interconnectable by fastening means,

b. a horizontally mounted direct path optical system located within said housing consisting of an eyepiece containing a single lens at one end of a light tube and an objective containing two lenses at the opposite end of said light tube, rotable focus means intermediate said eyepiece and objective forming part of said light tube and adapted to move said objective toward or away from said eyepiece as said focus means is rotated,

c. a spring tensioned movable slide holder in said housing at the forward end of said light tube having a central aperture into which the objective protrudes,

d. a vertically disposed slide slot just forward of said slide holder which slot is defined by said slide holder at the rear and by a centrally apertured slide retainer at the front said slot extending through the vertical width of said housing by means of apertures in both the base and cover portions of said housing,

e. a light deflecting prism forward of said apertured slide retainer said light deflecting prism being in alignment with said light tube, eyepiece and objective,

f. a light source and a diffuser each being positioned relative to said light deflecting prism and out of alignment with said light tube so that when said light source is lighted the light rays will pass through said diffuser and be deflected through said light deflecting prism, through said slide slot and along said light tube, and

g. an adjustable energy source located within said housing and interconnected with said light source, comprising battery means, an on-off switch and a potentiometer.

4,361,378

BIOCULAR VIEWING APPARATUS

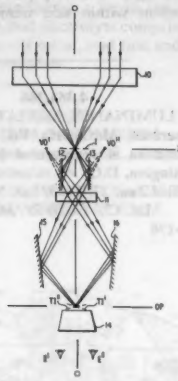
Michael H. Freeman, Clwyd, Wales, assignor to Pilkington P.E. Limited, Lancashire, England

Filed Apr. 21, 1978, Ser. No. 898,463

Claims priority, application United Kingdom, Apr. 27, 1977, 17589/77

Int. Cl.³ G02B *23/12, 23/02*

U.S. Cl. 350—36 19 Claims



1. Optical apparatus for biocular viewing having an optical axis comprising an objective lens for receiving light from a distant scene or object and producing an initial image thereof in an image plane, a biocular magnifying eyepiece lens having an object plane, relay lens means disposed between said image plane and said object plane, first reflector means associated with said relay lens means so that light from said initial image travels via the relay lens means and said first reflector means to form substantially in said object plane a first image tilted with respect to the optical axis, and second reflector means associated with said relay lens means so that light from said initial image travels via the relay lens means and said second reflector means to form substantially in said object plane a second image tilted with respect to the optical axis, each of said first and second reflector means comprising a pair of reflecting faces with said faces being tilted with respect to each other and at least one of said faces being tilted with respect to the optical axis so that said second image is tilted in a sense or direction of tilt opposite to that of said first image.

4,361,379

SURGERY MICROSCOPE WITH CUT-THROUGH FORM LENS WITH A LIGHT BARRIER

Friedrich Klein, Wedel, Fed. Rep. of Germany, assignor to Firma J. D. Möller Optische Werke GmbH, Wedel, Fed. Rep. of Germany

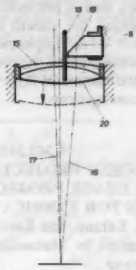
Filed Aug. 5, 1980, Ser. No. 175,450

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1979, 2932486

Int. Cl.³ G02B *21/06*

U.S. Cl. 350—91 8 Claims

1. In a surgery microscope with a front lens having at least one displaceable element through which can be passed light beams in addition to observation beams, the improvement comprising that the displaceable element of the front lens is constructed in cut-through form between the path of the illumination rays and their reflections on the lens surfaces on the one



hand and the path of the observation rays on the other and the cut point or notch is provided with a light barrier.

4,361,380

OPTICAL FIBER COUPLING MEANS HAVING SPIRAL AIR VENT PASSAGE

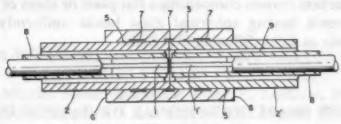
Silvio Marazzi, Cavigliano, Switzerland, assignor to Diamond SA, Losone, Switzerland

Filed Aug. 14, 1980, Ser. No. 177,882

Claims priority, application Switzerland, Aug. 15, 1979, 7466/79

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.21 10 Claims



1. A light conductor coupling means for coaxially connecting two optical fibres comprising two cylindrical end members each containing an optical fibre, a centering sleeve receiving and centering the end members with a precise fit and at least one spiral vent passage between the inner surface of the centering sleeve and the outer surfaces of the cylindrical end members.

4,361,381

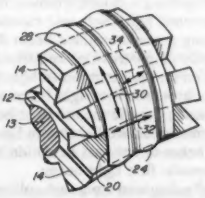
OPTICAL CABLE

Robert J. Williams, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Oct. 6, 1980, Ser. No. 194,447

Int. Cl.³ G02B *5/14, 5/16*

U.S. Cl. 350—96.23 6 Claims



1. An optical cable comprising a longitudinally extending

crush resistant central core formed with a plurality of circumferentially spaced, longitudinally extending ribs defining grooves between the ribs, a plurality of waveguides extending along the grooves, and a protective sheath surrounding the core and waveguides, the sheath comprising an inner metal layer and an outer water impermeable polymeric layer, the metal layer extending around the core to be carried upon outer ends of the ribs and the metal layer formed with circumferentially extending corrugations.

4,361,382

TRANSLUCENT PROJECTION SCREEN FOR REAR-TYPE IMAGE PROJECTION SYSTEM AND PROCESS FOR FABRICATING THE SAME

Keisuke Miyoshi, Katano, and Kenshiro Sumi, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 22, 1981, Ser. No. 227,233
Claims priority, application Japan, Jan. 29, 1980, 55/9855
Int. Cl.³ G03B *21/60*
U.S. Cl. 350—126 **8 Claims**

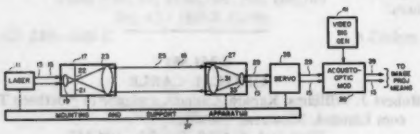
1. A translucent projection screen for a rear-type image projection system comprising a flat plate or sheet of a transparent resin having spherical glass beads uniformly dispersed therein as light diffusing materials.

4,361,383

LASER BEAM DIRECTIONAL DEVIATION AND NOISE STABILIZATION DEVICE

Robert K. McMahan, Jr., Winter Park, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 22, 1980, Ser. No. 180,538
Int. Cl.³ G02B *27/46*
U.S. Cl. 350—162.12 **11 Claims**



1. A laser beam directional deviation and noise stabilization device comprising, in combination:

means for projecting a monochromatic first light beam along a predetermined light path, said monochromatic first light beam having a predetermined beam diameter;

means spatially disposed from said first light beam projecting means on said predetermined light path for collimating said monochromatic first light beam so as to form a collimated monochromatic second light beam, said collimated monochromatic second light beam having removed therefrom any beam directional deviation inherent within said monochromatic first light beam;

means spatially disposed from said collimating means on said predetermined light path for reconstructing said collimated monochromatic second light beam so as to form a monochromatic third light beam, said monochromatic third light beam having a beam diameter the same as the beam diameter of said monochromatic first light beam without the beam directional deviations inherent within said monochromatic first light beam; and

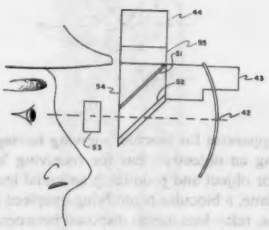
stabilizing means spatially disposed from said reconstructing means on said predetermined light path for maintaining the output power of said monochromatic third light beam at a constant value by eliminating from said monochromatic third light beam any power level deviations and noise inherent within said monochromatic third light beam.

4,361,384

HIGH LUMINANCE MINIATURE DISPLAY

David A. Bosserman, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 27, 1980, Ser. No. 163,542
Int. Cl.³ G02B *27/14, 7/18*
U.S. Cl. 350—174 **3 Claims**



1. A display system in combination with a helmet comprising:

a thin flat solid state display element having an array of thin-film electroluminescent elements for radiating a T.V. image;

an image intensifying tube having a screen anode, a photocathode and a fiber optics input faceplate;

housing means supporting said display element and said tube with said photocathode coupled to the output of said thin, flat, solid state display element through the fiber optics input faceplate;

a helmet adapted for mounting said display system;

said housing means mounted on said helmet; and

a visor so mounted on said helmet such that it reflects an image radiating from said tube, whereby the wearer of said helmet may see the reflected image when looking through said visor.

4,361,385

ELECTROCHROMIC DEVICE CONTAINING ACID COPOLYMER ELECTROLYTE

Sun Y. Huang, Stamford, Conn., and Robert D. Giglia, Rye, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 23, 1980, Ser. No. 199,892
Int. Cl.³ G02F *1/17*
U.S. Cl. 350—357 **5 Claims**

1. In an electrochromic device comprising a film of persistent electrochromic material in ion-conductive contact with a polymeric electrolytic film, and with both of said layers between two electrode layers of opposite polarity, the improvement wherein said polymeric electrolyte film is a copolymer of 2-acrylamido-2-methylpropanesulfonic acid and vinyl sulfonic acid.

4,361,386

ELECTROLYTIC DISPLAY CELL

Robert Meyer, St. Nazaire les Eymes, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed Oct. 6, 1980, Ser. No. 194,130
Claims priority, application France, Oct. 17, 1979, 79 25788
Int. Cl.³ G02F 1/29
U.S. Cl. 350—363 6 Claims

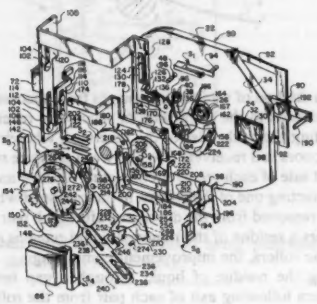
1. An electrolytic display cell comprising, between two electrodes of appropriate shapes, a liquid electrolyte containing metal ions, wherein said electrolyte comprises ions of a first metal and ions of a second metal, said first and second metals having similar redox potentials.

4,361,387

CAMERA MECHANISM

Robert P. Cloutier, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 18, 1981, Ser. No. 235,491
Int. Cl.³ G03B 7/10, 17/38
U.S. Cl. 354—43 13 Claims



1. In a camera adapted to receive a film element that is advanceable incrementally to successive exposure positions, said camera including:

(a) a motor;

(b) control means for controlling the mode of performance of the motor;

(c) an exposure regulating device adjustable in accordance with luminance; and

(d) a shutter releasable from a cocked condition to produce an exposure, the improvement comprising:

(1) first means operable for causing the motor to advance the film element received by the camera,

(2) second means operable for translating a particular mode of performance of the motor into a corresponding adjustment of the exposure regulating device in accordance with luminance,

(3) third means operable for causing the motor to release the shutter, and

(4) sequencing means for operating said first, second and third means sequentially and non-contemporaneously.

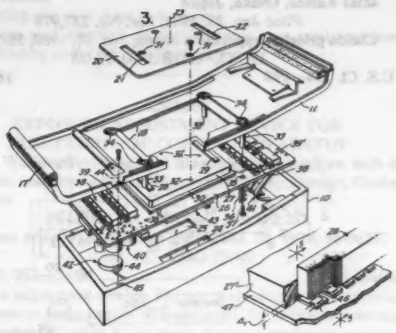
4,361,388

DIGITAL-MARKING CAMERA ATTACHMENT

Ludek Micak, Waldwick, N.J., and Peter G. Hoerenz, Hartsdale, N.Y., assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Dec. 19, 1980, Ser. No. 218,200
Int. Cl.³ G03B 17/24
U.S. Cl. 354—106 14 Claims

1. In a photographic camera wherein film to be exposed is held by a pressure plate against a fixed open frame in the focal plane of an exposure to be made, the pressure plate being resiliently mounted with respect to said frame such that contacting adjacent surfaces of the film and pressure plate are in substantially a common plane, and wherein luminous data pertaining to a given film exposure from a luminous-data source are to be embodied in the film within the frame of the exposure, the improvement in which the pressure plate has at least one aperture in register within a portion of the exposure frame and wherein means including a fiber-optics bundle com-



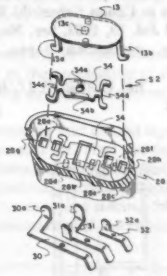
prising a dense array of parallel fibers is fixedly carried by said pressure plate and extends through the aperture and to said film-contacting plane, whereby one end of said fiber-optics bundle terminates at said plane, the other end of said fiber-optics bundle terminating in a plane adjacent said luminous data, there being no optical element between the luminous-data source and the adjacent other end of said fiber-optics bundle.

4,361,389

CAMERA-RESPONSIVE CHARGING APPARATUS FOR AN ELECTRONIC STROBE FLASH UNIT

David E. Monks, Spencerport, and Peter P. Lockner, Byron, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 15, 1982, Ser. No. 339,576
Int. Cl.³ G03B 15/05, 17/38
U.S. Cl. 354—139 5 Claims



1. In a camera having a shutter operable for regulating an exposure operation, and charging means for electronic strobe flash apparatus, the improvement comprising:

(a) a shutter-releasing member movable from a first position in which the exposure operation is reversible, to a second position in which the exposure operation is irreversibly initiated;

(b) delay means, responsive to movement of said shutter-releasing member to its second position, for establishing an interval to delay operation of said shutter; and

(c) charge controlling means, coupled to said delay means,

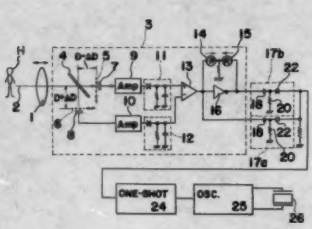
for activating said charging means during the delay interval to a level which is at least sufficient to fire electronic strobe flash apparatus.

4,361,390

FOCUS CONDITION INDICATING SYSTEM FOR USE IN A CAMERA

Seiji Yamada, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 23, 1981, Ser. No. 227,978
Claims priority, application Japan, Jan. 28, 1980, 55/9476[U]
Int. Cl.³ G03B 3/00, 13/18
U.S. Cl. 354—198 18 Claims



1. A focus condition indicating system for use in a camera comprising:

an objective lens movable between a near focus position, where an image of a target object located a minimum available distance away from the camera can be focused on an image forming plane, and an infinite focus position, where an image of a target object located at a substantially infinite distance away from the camera can be focused on said image forming plane;

control signal producing means for producing a control signal when said objective lens moves past a proper focus position; and

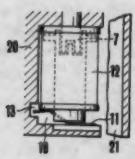
sound producing means for producing a sound signal for a given short period of time upon receipt of said control signal.

4,361,391

FILM MAGAZINE HOLDING DEVICE FOR CAMERA

Shosuke Haraguchi, and Ryoichi Yoshikawa, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 13, 1981, Ser. No. 282,606
Claims priority, application Japan, Jul. 17, 1980, 55-101883[U]
Int. Cl.³ G03B 17/30
U.S. Cl. 354—288 5 Claims



1. A film magazine holding device for a camera comprising:

a camera body including a back cover;

a film magazine loading chamber provided on the camera body;

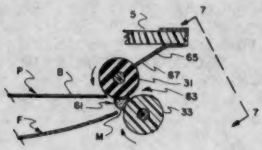
film magazine holding means provided at one end of said film magazine chamber, said holding means having an end which is larger than the lower end of a film magazine which may be placed in said chamber, said holding means operating to push the loaded film magazine against the end of said film magazine chamber opposite said one end, whereby an opening in said film magazine through which film is drawn outwardly therefrom will not be rotated out of a predetermined position in the opened and the closed state of the back cover.

4,361,392

IMAGE-TRANSFER METHOD AND APPARATUS

William J. Hutchinson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 22, 1981, Ser. No. 276,319
Int. Cl.³ G03D 9/00
U.S. Cl. 354—302 9 Claims



1. In a method of transferring images from successive liquid-treated donors to the front sides of successive receivers without wetting the back sides of the receivers, wherein each pair of the donors and receivers is fed between pressure rollers with the front side of each receiver contacting a donor and the back side contacting one of the rollers, in the course of which excess liquid is removed from the donor and after each pair exits from the rollers a residue of the removed liquid remains at an entry nip of the rollers, the improvement comprising:

passing the residue of liquid through a gap between the rollers following exit of each pair from the rollers; and

removing liquid passed through the gap from the roller that contacts the back sides of the receivers to prevent that roller from wetting the back side of the next succeeding receiver.

4,361,393

VERY HIGH SPEED DUPLICATOR WITH FINISHING FUNCTION

Fedele A. Noto, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 15, 1981, Ser. No. 254,354
Int. Cl.³ G03G 15/00
U.S. Cl. 355—3 SH 2 Claims

1. In a reproduction system having a document handling apparatus adapted to transport individual document sheets from a supply stack to an exposure platen of a reproduction processor and effecting multiple exposure of each of the document sheets before returning a sheet to the supply stack, wherein the processor produces copy sheets of the exposed document sheets, the combination of:

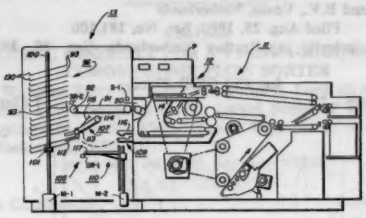
a sorter array having a plurality of bins arranged to receive the copy sheet output from the processor at a fixed receiving station and to collate the same,

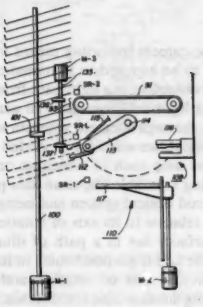
a finishing apparatus adapted to receive collated sets of copy sheets of a set of document sheets when activated and to bind the same,

means for producing indexing movement of said array of bins in a copy sheet receive mode in timed relation with the activation of said finishing apparatus, and

a set transport mechanism having a member pivotally mounted at one end and a gripping device at the other end, said gripping device being arranged to remove each

completed set of copy sheets from each bin and to transport the same to said finishing station, said set transport





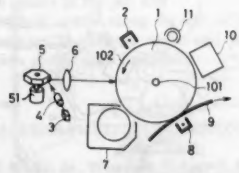
and said fixed receiving station being positioned on the same side of said sorter array.

4,361,394

METHOD AND APPARATUS FOR SCANNING LIGHT BEAM

Yukio Sakai; Fumio Yamazaki, both of Hirakata, and Isao Satoh, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 22, 1981, Ser. No. 285,319
Claims priority, application Japan, Jul. 25, 1980, 55-102716
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 R **5 Claims**



1. Method for scanning light beam in a xerographic recording comprising the steps of precharging a photoreceptor, said photoreceptor to spots of light beam scaning on said photoreceptor for a desired pattern thereby to form a latent image on said photoreceptor,

developing said latent image thereby producing visible image,

characterized in that

the method comprises the steps of memorizing at least a first image information of one neighboring picture element with respect to a selected picture element in a main scanning direction, and a second image information of one neighboring picture element with respect to the selected picture element in a sub-scanning direction,

issuing a correlation output which is produced when said first image information and said second image information have a predetermined relation to that of said selected picture element,

increasing the size of the spots of light beam of said selected picture elements when a predetermined correlation output is issued,

carrying out said steps in turn, and

shifting said selected picture elements in a predetermined scanning order on said photoreceptor.

4,361,395

EXPOSURE ADJUSTMENT DEVICE FOR ELECTROSTATIC COPYING APPARATUS

Takaji Washio, Toyonaka, and Masami Kai, Neyagawa, both of Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Filed Jul. 25, 1980, Ser. No. 172,282
Claims priority, application Japan, Jul. 28, 1979, 54-96237
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **3 Claims**

1. An adjustment device, for use in an electrostatic copying apparatus to make copies of an original, for selectively setting the number of copies to be made during a particular copying operation of the apparatus, and for selectively adjusting the electrical energization of an exposure light source of the apparatus, thereby to adjust the copy density of exposure during the copying operation, said adjustment device comprising:

keyboard means for, in one input mode, inputting a selected number of copies to be made during the particular copying operation of the electrostatic copying apparatus, and for, during another input mode, inputting a selected copy density of exposure value, said keyboard means adapted to be connected to the electrostatic copying apparatus such that the apparatus conducts the copying operation to make said selected number of copies at said selected copy density of exposure value;

change-over switch means for switching said keyboard means between said one and another input modes;

latch circuit means, operatively connected to said keyboard means when in said another input mode for storing an electrical first signal representative of said selected copy density of exposure value, and adapted to be connected to the exposure light source of the apparatus for transferring said first signal thereto for controlling the electrical energization thereof;

copying operation responsive control circuit means, adapted to be responsive to the completion of the copying operation, for generating an electrical second signal representative thereof; and

timer means for receiving said second signal from said control circuit means and for, after the lapse of a predetermined period of time, releasing said first signal representative of said selected copy density of exposure value from said latch circuit means and storing therein an electrical third signal representative of a standard copy density of exposure value.

4,361,396

COLLECTING APPARATUS FOR SCATTERING TONER

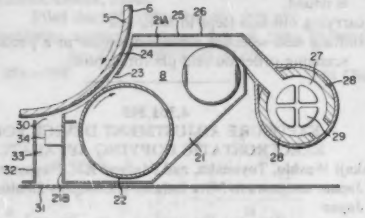
Tohru Uchida, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Japan

Filed Feb. 19, 1980, Ser. No. 122,710
Claims priority, application Japan, Feb. 24, 1979, 54-20211
Int. Cl.³ G03G *21/00, 15/00*
U.S. Cl. 355—15 **8 Claims**

1. In a recording machine which includes a developing device and which utilizes magnetic toner as a developing agent, collecting apparatus for scattering toner generated at a development zone and comprising:

means defining an air flow path communicating at one end thereof with the development zone;

means defining a toner collecting chamber at another end of said air flow path for communication with the development zone through said flow path and for receiving and collecting therein scattering toner;



suction means for generating a directional flow of air for transporting scattering toner through said air flow path from the development zone to said toner collecting chamber; and

means in said collecting chamber for generating a magnetic field so as to facilitate collection in said chamber of scattering toner transported thereto from the development zone through said air flow path.

4,361,397

CLEANING APPARATUS FOR AN ELECTROSTATIC RECORDING MACHINE

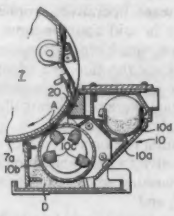
Hiroshi Katakura, and Tomio Arai, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 27, 1980, Ser. No. 181,870

Claims priority, application Japan, Aug. 31, 1979, 54-110446

Int. Cl.³ G03G *15/09, 21/00*

U.S. Cl. 355—15 **5 Claims**



1. In an improved magnetic brush type apparatus for cleaning residual developer from the surface of a moving electrostatic image receiving member in an electrostatic recording machine, wherein the cleaning apparatus includes a sleeve disposed to define a predetermined gap between the sleeve and the member surface at a cleaning position at which residual developer on the member surface is attracted therefrom to the sleeve, the improvement comprising:

a magnetic member disposed in said cleaning apparatus upstream of the cleaning position and in predeterminately close proximity to the surface of the electrostatic image receiving member for magnetically attracting residual developer from the surface of the image receiving member in advance of and to supplement magnetic brush cleaning of the member surface immediately downstream of said magnetic member at the cleaning position, whereby the surface cleaning efficiency of the cleaning apparatus is notably enhanced.

4,361,398

REPROGRAPHIC CAMERA

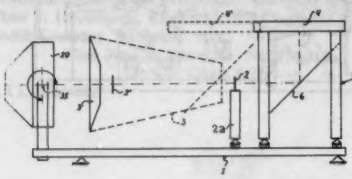
Jens Hagedorn-Olsen, Hornbaek, Denmark, assignor to Oce-Nederland B.V., Venlo, Netherlands

Filed Aug. 25, 1980, Ser. No. 181,100

Claims priority, application Netherlands, Sep. 25, 1979, 7907114

Int. Cl.³ G03B *27/62*

U.S. Cl. 355—75 **7 Claims**



1. In a reprographic camera including means for holding an original in a position to be exposed to illumination, an optical system comprising an objective in a light path from the original and means for holding light-sensitive material across said path beyond the objective, the improvement wherein said means for holding an original comprises a holder provided with at least two mounting surfaces onto each of which an original can be fitted, said holder being rotatable about an axis perpendicular to the optical axis of said optical system and being settable in a plurality of positions relative to its axis of rotation, in each of which one of said surfaces lies in a path of illumination and faces the optical system and is perpendicular to its optical axis, the distance between said axis of rotation and one of said mounting surfaces being smaller than the distance between said axis of rotation and a second of them, whereby the reproduction ratio of an original mounted on said second surface is greater than that of an original mounted on said one surface.

4,361,399

APPARATUS FOR RELEASING A SHEET-REGISTRATION MECHANISM

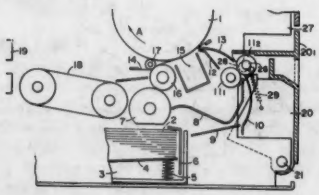
Takamasa Sawada, Yokohama; Akiyoshi Torigai, Machida, and Teruo Morikawa, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 28, 1980, Ser. No. 201,535

Claims priority, application Japan, Nov. 8, 1979, 54-144723

Int. Cl.³ G03B *27/62*; B65H *9/04*

U.S. Cl. 355—75 **4 Claims**



1. In an apparatus for releasing and re-positioning a sheet-registration mechanism, comprising primary and secondary register members which cooperate with each other for registering a projected image of an original with a sheet being fed, and an openable cover member located at a position spaced laterally from said apparatus for cooperating with said secondary register member to release the nip between said primary and secondary register members, the improvement wherein said primary register member includes at least one driving register roller, and said secondary register member includes at least one driven register roller, and wherein said driven register roller includes a shaft which is engaged with said apparatus,

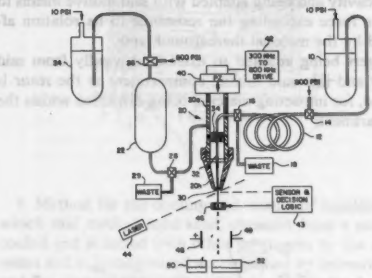
and further including a locking mechanism for causing a member which urges said driven register roller under pressure to lock said cover member.

4,361,400

FLUIDIC ASSEMBLY FOR AN ULTRA-HIGH-SPEED CHROMOSOME FLOW SORTER

Joe W. Gray; Terry W. Alger, and David E. Lord, all of Livermore, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 26, 1980, Ser. No. 210,487
Int. Cl.³ G01P 3/40
U.S. Cl. 356—23 10 Claims



1. In a process for sorting minute particles in a suspension fluid ejected as a jet from a nozzle at high speed, a method of producing droplets from said jet at a high frequency, comprising the steps of

providing a nozzle designed for laminar flow of a narrow sample stream and surrounding sheath fluid at high pressure with an orifice having a ratio of length to diameter sufficiently small to maintain laminar flow therethrough of said sample and sheath fluids, and a sharp right angle edge at the inlet thereof to preserve laminar flow during the transition of flow in said nozzle to flow through said orifice at high speed,

connecting sheath fluid to said nozzle at high pressure to produce a high velocity jet from the orifice thereof,

connecting sample fluid to a tube in said nozzle at the same high pressure as said sheath fluid, said tube being positioned with its outlet aligned with the axis of sheath fluid flow through said orifice to place the sample fluid stream at the center of the jet, and

vibrating said nozzle along the axis of said jet at said high frequencies, thereby to cause said jet to break off into droplets at said high frequency.

4,361,401

AUTOMATIC SAMPLE DEPOSITION IN FLAMELESS ANALYSIS

Stanley B. Smith, Jr., Westford; Robert G. Schleicher, Bradford, and Edward C. Eldred, Wenham, all of Mass., assignors to Instrumentation Laboratory Inc., Lexington, Mass.

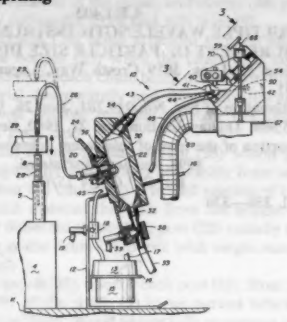
Continuation of Ser. No. 907,973, May 22, 1978, abandoned.
This application Jun. 23, 1980, Ser. No. 161,879
Int. Cl.³ G01N 1/10, 21/74
U.S. Cl. 356—36 17 Claims

1. Apparatus for automatically depositing predetermined reproducible amounts of aerosol samples into a furnace atomizer of an atomic absorption spectrophotometer, with said atomizer being provided with an aperture, comprising

a nebulizer-mixing chamber device in communication with a sample container containing sample to be analyzed,

means for depositing aerosol samples from said device through said aperture into said furnace atomizer, said means having communication with said device, and

means for controlling the amounts of aerosol samples being deposited to assure that the deposited amounts are reproducible comprising



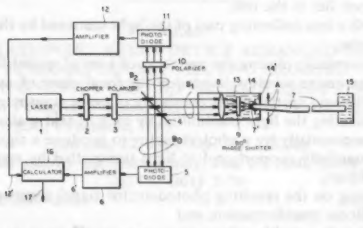
a vacuum source in valved communication with said means for depositing aerosol samples whereby aerosol deposition takes place only during the time period when said vacuum source is shut off from said means for depositing by shutting off said valve.

4,361,402

APPARATUS FOR DETERMINING THE REFRACTIVE-INDEX PROFILE OF OPTICAL FIBERS

Bruno Costa, Turin, Italy, assignor to Cselt - Centro Studi E Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Aug. 1, 1980, Ser. No. 174,694
Claims priority, application Italy, Aug. 2, 1979, 68600 A/79
Int. Cl.³ G01N 21/00
U.S. Cl. 356—73.1 4 Claims



1. In an apparatus for determining the refractive-index profile of an optical fiber comprising a source of linearly polarized coherent incident light, an optical objective in the path of said incident light for focusing same on a substantially punctiform area of a confronting end of said fiber, light-guiding means for intercepting light reflected from the confronting fiber end through said objective, fiber-engaging means displaceable relatively to said objective in a plane perpendicular to the optical axis thereof, and evaluation means positioned to receive the reflected light intercepted by said light-guiding means,

the combination therewith of a $\pi/2$ phase shifter inserted between said objective and said fiber end, whereby light reflected by said fiber end and intercepted by said light-guiding means after two traverses of said phase shifter has a plane of polarization orthogonal to the plane of polarization of spurious light rays reflected directly by said objective toward said light-guiding means, and a polarizer inserted between said light-guiding means and said evaluation means for passing only the light reflected by said fiber end to the exclusion of said spurious light rays, said fiber-

engaging means holding said fiber end inclined at slightly less than 90° to said optical axis for avoiding interferences between the incident and the reflected coherent light.

4,361,403

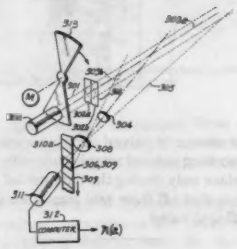
MULTIPLE WAVELENGTH INSTRUMENT FOR MEASUREMENT OF PARTICLE SIZE DISTRIBUTIONS

Hendricus G. Loos, 3019 Cresta Way, Laguna Beach, Calif. 92651

Continuation of Ser. No. 919,281, Jun. 26, 1978, Pat. No. 4,245,909. This application Jan. 21, 1980, Ser. No. 113,673 The portion of the term of this patent subsequent to Jan. 20, 1998, has been disclaimed.

Int. Cl.³ G01N *15/02*

U.S. Cl. 356—336 **46 Claims**



1. A method for measurement of the size distribution of particles suspended in a gas or a liquid, comprising:

passing into the particle suspension a substantially collimated beam of light, said beam having a beam axis and a collective spectrum having a spectral set of a plurality of substantially monochromatic light components chosen from the blue, green, and red portions of the visible light spectrum, such that at most one of said light components lies in the blue, at most one lies in the green, and at most one lies in the red;

with a lens collecting part of the light scattered by the particles;

sequentially placing the members of a set of spatial filters in an image window located in the focal plane of said lens, the said spatial filters consisting of color transparencies;

collecting the light transmitted by each of said spatial filters sequentially by a photodetector to produce a signal substantially proportional to light transmitted by respective filters;

acting on the resulting photodetector signal sequence by a linear transformation; and

using the resulting data sequence as coefficients in a linear combination of basis functions to yield the particle size distribution.

4,361,404

MIXING EQUIPMENT AND AGITATOR THEREFOR FOR USE WITH GRANULAR MATERIAL AND METHOD OF PRODUCING PREPARED GRANULAR MATERIAL

Richard E. Colin, Roselle, and Pete B. Pederson, Chicago, both of Ill., assignors to Pettibone Corporation, Chicago, Ill.

Filed Apr. 6, 1981, Ser. No. 251,366

Int. Cl.³ B02C *15/00, 23/00*

U.S. Cl. 366—2 **35 Claims**

1. In mixing equipment including a mixing compartment, means for supplying material to be mixed to the mixing compartment; and at least one mulling assembly rotatably driven about an upright axis within the compartment for dispersing within the compartment material, including granular material, the mulling assembly producing a rolling and rotating torus of the granular material mixture, apparatus for agitating the dispersed material and for discharging prepared material from the mixing compartment, said apparatus comprising:

means defining a discharge opening in a side wall of the mixing compartment;

door means mounted for movement between open and closed positions relative to said opening;

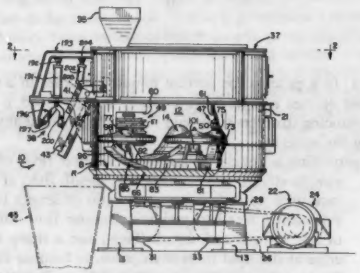
means including an upright wall defining a rotor cavity opening into said mixing compartment at a location spaced from said discharge opening;

an agitator having a rotor mounted for rotation about an upright longitudinal axis thereof disposed within said cavity, said rotor including a plurality of impacting fingers extending laterally from said rotor axis; and

motive means for rotating said rotor about said rotor axis;

said rotor being mounted with respect to the wall of the rotor cavity and being adapted with said motive means to exert a force exceeding the resistance to its rotation afforded by the material therearound; and

said fingers being adapted to extend outwardly from said cavity and into said mixing compartment as the rotor is rotated, for impacting material being dispersed within the compartment;



means for sensing the consistency of the material being dispersed;

means responsive to said sensing means for opening said door means at a predetermined first consistency, thereby to permit prepared material to overflow the bottom of said opening for discharge from the mixing compartment;

means for closing said door means and for causing the termination of the supply of material to be mixed to said mixing compartment to commence a shutdown cycle of operation during which material is retained within the mixing compartment;

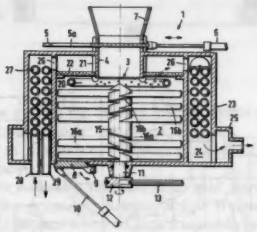
retention timing means for causing material to be dispersed in the mixing compartment for a predetermined period of time, and subsequently for opening said door means while continuing to disperse material in said mixing compartment, to discharge the retained material from the mixing compartment; and

discharge timing means for discontinuing said dispersing of material in said mixing compartment following the discharge of material, whereby the production of material is shut down with the mixing compartment at least partially empty of prepared material.

4,361,405
METHOD AND APPARATUS FOR PREPARING, MORE PARTICULARLY FOR THE COOLING AND MIXING OF MOULDING SAND

Rolf Wedek, Alfeld, and Lothar Meiritz, Sarstedt, both of Fed. Rep. of Germany, assignors to Alfelder Maschinen-Und Modell-Fabrik Kunkel, Wagner & Co. K.G., Fed. Rep. of Germany

Filed Dec. 18, 1980, Ser. No. 217,591
Int. Cl.³ B28C 5/46; B01F 13/06
U.S. Cl. 366—7 **22 Claims**

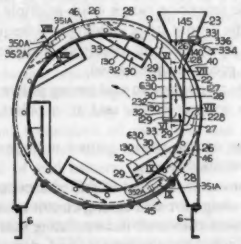


1. Method for the cooling and mixing of moulding sand, in which said method used sand, obtained from a sand batch is cooled and is mixed with other substances by the addition of water and is homogenized accompanied by intensive agitation and the sand particle surface is at least partially covered with a binding agent, characterised in that the sand granule surface is covered with binder under vacuum.

4,361,406
APPARATUS FOR MIXING SALVAGED ASPHALT MATERIAL

Ted C. Loggins, Jr., Rowland Heights; John P. Selberg, Los Angeles, and Rudolf W. Rapmund, Placentia, all of Calif., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 75,414, Sep. 14, 1979, abandoned. This application Jun. 22, 1981, Ser. No. 275,453
Int. Cl.³ B28C 5/46
U.S. Cl. 366—25 **12 Claims**



1. In mixing apparatus for reclaimed asphalt paving (RAP) material with virgin paving material comprising an elongated drum (5) that is rotatable about a substantially horizontal axis and has a side wall (9) concentric to said axis, and which drum (5) has an inlet (7) at a rear end thereof and an outlet (8) at its opposite forward end, charging means (23, 26, 29) by which RAP material can be fed into the drum through its side wall at a charging zone (21) between its ends to be mixed with virgin material moving through the drum (5) from said inlet (7) to said outlet (8), said charging means being characterized by:

a hopper (23) spaced above a side wall (9) of the drum (5), said hopper (23) being located and arranged to discharge said RAP material downwardly towards each of a plurality of ports (22) in said side wall (9) that are circumferentially spaced from one another around said zone (21);

a plurality of chutes (26), one for each port (22), fixed on the interior of said side wall (9) of the drum (5) to be moved orbitally by rotation of the drum, said chutes (26) projecting radially outwardly from said side wall (9),

each of said chutes (26) being arranged to open upwardly towards the hopper (23) when the chute is in an upper portion of its orbit, each chute being operable to direct the RAP material downwardly and forwardly towards the discharge end without crossing through the axial flow path of hot gases, and

each chute (26) having a wall portion (28) which extends obliquely upwardly and radially outwardly from said side wall (9) when the chute (26) is in said portion of its orbit and by which material that falls from the hopper (23) is caught and deflected through its port (22) radially toward the interior of the drum (5) to mix with virgin material in the bed load,

a plurality of spouts (29), one for each port (22), fixed on said side wall (9) of the drum (5) to be moved orbitally by drum rotation, each of said spouts (29) projecting into the interior of the drum (5) from said side wall (9); and

being in communication through its associated port (22) with the chute (26) for that port,

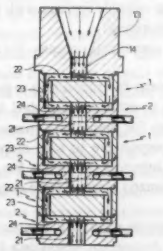
each of said spouts having an outlet (129) which opens substantially toward said forward discharge end of the drum and which is located at the front of said charging zone (21); and,

having a wall portion (30) which extends obliquely forwardly and downwardly when its chute (26) is in said upper portion of its orbit and which extends to said outlet (129), whereby material deflected through the port (22) by the chute (26) is further deflected forwardly toward the discharge end to leave said outlet (129) with a forward momentum by which the material is carried forward of the outlets (129) of spouts (29) therebeneath, whereby the RAP material is mixed with virgin material without showering across the hot gas stream so as to materially reduce charring of fine asphalt material particles in the hot gas stream to reduce blue smoke emission.

4,361,407
STATIONARY MIXER DEVICE ARRANGED TO HOMOGENEOUSLY MIX TWO OR MORE COMPONENTS IN LIQUID OR SEMILIQUID STATE

Vittorio Pellegrini, Novara, Italy, assignor to Centro Ricerche Fiat S.p.A., Orbassano, Italy

Filed Jun. 22, 1981, Ser. No. 275,680
Claims priority, application Italy, Jun. 27, 1980, 68009 A/80
Int. Cl.³ B01F 5/06
U.S. Cl. 366—340 **6 Claims**



1. A mixer device arranged to homogeneously mix two or more components in liquid or semiliquid state, particularly the components of a mixture comprising a solid phase and a liquid phase of a metal alloy, characterized in comprising a plurality of superimposable elements, in each of which there are formed

cavities and holes arranged to give rise to channels for conveying the said components, the said channel being disposed in such a manner as to originate a plurality of channel assemblies disposed in series to each other, each assembly comprising a first central channel, second channels whose axes are substantially orthogonal to that of the said first channel and which communicate with the said first channel and are disposed radially relative to it, third channels each of which has its axis parallel to that of the said first channel and originates from a corresponding second channel, and fourth channels whose axes are substantially orthogonal to the axis of the said first channel and which are disposed radially with respect to it, each of the said fourth channels being in communication with one of the said third channels and with the first channel of an adjacent assembly.

4,361,408

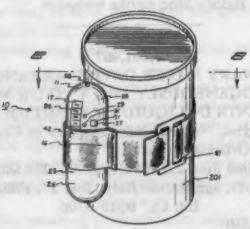
TIMER AND ALARM APPARATUS

Jonathan Wirtschafter, Minneapolis, Minn., assignor to Medi-minder Development Ltd., Minneapolis, Minn.

Filed Oct. 10, 1978, Ser. No. 949,800

Int. Cl.³ G04B *47/00*; G04F *8/00*; G08B *1/00*

U.S. Cl. 368—10 **6 Claims**



1. Timer apparatus suitable for use with medicine containers or other vessels comprising:

(a) elapsed time measuring means for measuring elapsed time;

(b) interval set means for providing a preset time interval;

(c) display means operably connected to said elapsed time measuring means for displaying measured elapsed time;

(d) alarm means responsive to said elapsed time measuring means and said interval set means for periodically signaling that the measured elapsed time exceeds the preset time intervals;

(e) switch reset means operably connected to said elapsed time measuring means for restarting the measurement of elapsed time; and

(f) indicator means responsive to said elapsed time measuring means, said interval set means and to said switch reset means for periodically signaling that said switch reset means has not restarted the measurement of elapsed time subsequent to the coincidence of measured elapsed time with the preset time interval.

4,361,409

ELECTRONIC WATCH HAVING BRAKED STEPPING MOTOR

Hans-Rudolf Sutter, Pieterlen, Switzerland, assignor to Bulova Watch Company, Inc., Flushing, N.Y.

Division of Ser. No. 968,694, Dec. 12, 1978, Pat. No. 4,214,434.

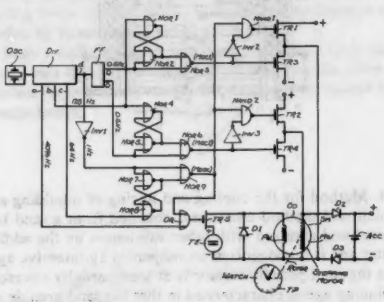
This application Apr. 25, 1980, Ser. No. 143,610

Claims priority, application Switzerland, Dec. 16, 1977, 15504/77

The portion of the term of this patent subsequent to Jul. 29, 1997, has been disclaimed.

Int. Cl.³ G04B *19/04*; G04F *5/00*

U.S. Cl. 368—80 **5 Claims**



1. A miniature electronic timepiece having an analog display formed by time-indicating hands, said timepiece comprising:

A a stepping motor having a stator coil responsive to applied drive pulses to cause its rotor operatively coupled to said hands to step; said stator coil being wound on a core also having an auxiliary coil wound thereon which forms the primary of a transformer whose secondary is said stator coil;

B an electronic timing circuit including a high-frequency time base and a multi-stage frequency divider coupled thereto, each intermediate stage of the divider yielding pulses whose repetition rate is a sub-multiple of said high-frequency, the output stage yielding low frequency timing pulses, said timing circuit requiring a direct energizing voltage at a predetermined level;

C a driver stage responsive to said timing pulses and coupled to said stator coil to produce said drive pulses for stepping the rotor;

D a d-c voltage source whose output voltage differs from said predetermined level;

E a voltage converter coupled to said source to produce an energizing voltage for said timing circuit at said predetermined level, said converter incorporating said transformer and further including a pulse-actuated electronic voltage chopper interposed between the d-c source and said primary to supply a periodically-intercoupled voltage thereto, thereby producing an alternating voltage at said secondary which is rectified to yield said energizing voltage;

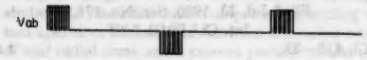
F first means controlled by pulses derived from an intermediate stage of said divider and coupled to said driver stage to regulate the duration of said drive pulses produced thereby; and

G second means controlled by pulses derived from another intermediate stage of said divider and coupled to said driver stage to cause it at the conclusion of each drive pulse to momentarily short circuit said stator coil to thereby brake said rotor after it makes a step.

4,361,410
DRIVE SYSTEM FOR PULSE MOTOR

Fumio Nakajima, Tokyo; Takayasu Machida, Iruma, and Kenji Yamada, Koganei, all of Japan, assignors to Citizen Watch Company Ltd., Tokyo, Japan

Continuation of Ser. No. 942,869, Sep. 15, 1978, abandoned. This application Jun. 11, 1980, Ser. No. 158,493
Claims priority, application Japan, Sep. 26, 1977, 52-114720; Jan. 27, 1978, 53-8068
Int. Cl.³ G06F *1/04;* G04C *3/00;* G05B *19/40*
U.S. Cl. 368—157 4 Claims



1. A drive system for driving a pulse motor of an electronic timepiece, comprising:

a source of a standard frequency signal of relatively high frequency;

a frequency divider responsive to said standard frequency signal for providing a train of low frequency pulses and first and second trains of high frequency pulses each being of substantially higher frequency than said low frequency pulse train, the duty cycles of said first and second high frequency pulse trains being mutually different;

detection circuit means coupled to each end of a drive coil of said pulse motor for periodically detecting a reverse voltage produced across said drive coil due to motion of a rotor of said pulse motor, to produce a detection signal when said reverse voltage is above a predetermined level;

modulation circuit means responsive to said detection signal produced by said detection circuit means for selectively modulating said low frequency pulse train by said first high frequency pulse train to produce a first train of composite drive input pulses and modulating said low frequency pulse train by said second high frequency pulse train to produce a second train of composite drive input pulses; and

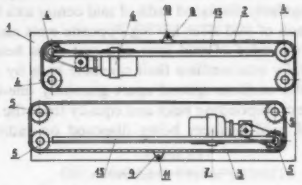
drive circuit means comprising a first pair of CMOS transistors comprising a P-channel and a N-channel transistor and a second pair of CMOS transistors comprising a P-channel and an N-channel MOS transistor, with the drain terminals of said first pair of CMOS transistors being connected in common to one end of a drive coil of said pulse motor and with the drain terminals of said second pair of CMOS transistors being connected in common to the other end of said drive coil, the source terminals of said N-channel transistors of said first and second pairs of CMOS transistors being connected in common to a low potential of said battery and the source terminals of said P-channel transistors of said first and second pairs of CMOS transistors being connected in common to a high potential of said battery, gate terminals of said first and second pairs of CMOS transistors being coupled to receive said composite input drive pulses such that a first condition in which said P-channel transistor of one of said two pairs of CMOS transistors and said N-channel transistor of the other of said two pairs of CMOS transistors are conducting and a second condition in which the P-channel transistor of the other of said two pairs of said CMOS transistors and the N-channel transistor of said one of said two pairs of said CMOS transistors are conducting are alternately repeated in response to said high frequency pulses in each of said composite input drive pulses, said drive circuit means being responsive to said first and second composite drive input pulses for producing first and second composite drive signals respectively, said first and second composite drive signal pulses being coupled to said drive coil of said pulse motor;

whereby each of said composite drive signal pulses applied to said pulse motor comprises a plurality of high frequency pulses, with the duty cycle of said high frequency pulses being selectively determined in accordance with the rotational speed of the rotor of said pulse motor when said periodic detection of said drive coil reverse voltage is performed, and whereby said pulse motor is periodically actuated by said composite drive signal pulses to rotate at a rate determined by the repetition frequency of said composite drive signal pulses.

4,361,411
STORAGE SYSTEM

Natale Di Liddo, Borgo San Dalmazzo, Italy, assignor to Istituto Grafico Bertello S.p.A., Italy

Filed Oct. 22, 1979, Ser. No. 86,833
Claims priority, application Italy, Apr. 27, 1979, 12569 A/79
Int. Cl.³ B65G *1/10, 65/00*
U.S. Cl. 414—277 4 Claims



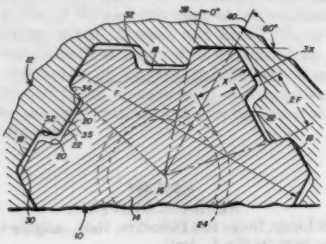
1. A storage system comprising a plurality of like removable bins, each of said bins having an engageable member in the form of an open-ended inverted L-shaped lip at each of two opposed ends, and transfer means operable to selectively transport one of said bins from a first storage position to an inspection position and to selectively return said bin from said inspection position to said storage position, said transfer means including a base, a pair of parallel bin guides mounted on said base, two groups of sprockets rotatably mounted on said base, a pair of endless belts disposed in the same horizontal plane, each belt engaging one of said groups of sprockets, said groups of sprockets defining two polygonal tracks having two long legs for said belts about said bin guides, at least one long leg of each of said polygonal tracks being disposed in parallel but offset relationship to one long leg of the other polygonal track within and parallel to said bin guides; bin engaging means comprising a pin disposed on each of said belts and operable to pass under the horizontal portion of said lip and behind the vertical portion of said lip of one of said engageable members on said bin when said bin engaging means is advancing along a first non-parallel leg of said track, to advance said engaged bin along said parallel long leg of said track, to pass out of said lip when further advanced from said parallel long leg to a second non-parallel leg, and to move said disengaged bin engaging means to an idle position between said first and second non-parallel legs, and means operable to advance, stop and reverse each of said belts independently of the other of said belts, said bin being moved between said storage position to said inspection position by sequential engagement by the bin engaging means on a first of said belts an advancement thereby along said parallel long leg of said first belt and then by the bin engaging means on the second of said belts an advancement thereby to said inspection position along said parallel long leg of said second belt.

4,361,412

FASTENER WITH IMPROVED TORQUE TRANSFER SURFACES

Gregory Stolarczyk, 12910 Orme Rd., Garfield Heights, Ohio 44125

Filed Dec. 7, 1979, Ser. No. 102,102
Int. Cl.³ F16B *23/00*
U.S. Cl. 411—402 9 Claims



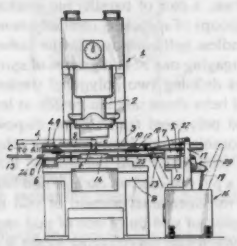
1. In combination with a body defining a center axis and having at least four adjacent generally planar sides equally spaced from said axis and disposed normal to adjacent 60° relatively angularly displaced radii of said center axis bisecting said sides, each of said sides having opposite ends and at least the center two sides of said four adjacent sides being interrupted centrally intermediate their opposite ends by a pair of torque transfer surfaces spaced apart generally one-third the length of the correponding sides and equally from the opposite ends thereof, said surfaces being disposed on radii of said center axis.

4,361,413

WORK FEED APPARATUS IN A PRESS

Setsuo Toda, Sagamihara, Japan, assignor to Aida Engineering Ltd., Sagamihara, Japan

Filed Jan. 28, 1980, Ser. No. 116,290
Claims priority, application Japan, Jan. 22, 1979, 54-5001[U]
Int. Cl.³ B30B *13/00*
U.S. Cl. 414—752 4 Claims



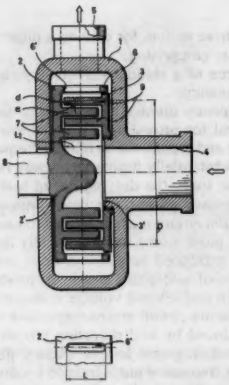
1. A work feed apparatus for a press comprising a workpiece feedbar assembly including a feedbar disposed in the press gap rearwardly of a die unit adapted to be disposed at the side of the press, said drive unit including a rocking means operatively connected to said feedbar to move said feed bar horizontally in the direction transverse to the press, an operation drum cam mounted on a drive shaft and operatively connected to said rocking means to move it through a predetermined oscillating motion, a cam plate mounted on said drive shaft, a lift unit assembly, a lift rod operatively engaging said cam plate to be actuated by said cam plate and operatively connected to said lift unit assembly to impart upward and downward movement thereto, said lift unit assembly being operatively connected to said feed bar assembly to impart upward and downward movement thereto.

4,361,414

EQUIPMENT FOR THE DELIVERY OF SLURRIES AND FOR REFINEMENT DURING DELIVERY

Sandor Nemes; Karoly Solymos, both of Tatabanya; Laszlo Barna, Budapest; Tibor Bognar, Budapest; Jozsef Szigetvari, Budapest; Ferenc Vajda, Budapest, and Endre Tornai, Budapest, all of Hungary, assignors to Banyaszati Kutato Intezet, Budapest and Tatabanyai Szenbanyak, Tatabanya, both of, Hungary

Filed Jul. 23, 1980, Ser. No. 171,547
Int. Cl.³ F04B *1/08*
U.S. Cl. 415—83 4 Claims



1. Equipment for delivery of slurry and refinement during delivery, comprising a housing having an axial inlet opening and a tangential discharge opening, a disc-shaped stationary part in said housing and having a concentric opening communicating with said inlet opening, a disc-shaped rotary part opposite said stationary part, rods disposed in concentric circular series and alternately on said stationary part and said rotary part in such a way that said rods of each part point toward the other part, said rotary part having a jacket surrounding said rods, said jacket having holes extending therethrough in a radial direction, said holes being each completely surrounded by the material of said jacket, there being a gap between the two adjacent stationary part rods and the rotary part rod in the radial direction providing a refinement of slurry by the cavitation and turbulence effect of said rods, said gap being ½–¼th of the rod breadth.

4,361,415

ROTARY-WING AIRCRAFT ROTOR HAVING A COMPACT ARTICULATED HUB

Jacques A. Aubry, Cabries, France, assignor to Societe Nationale Industrielle Aerospatiale, France

Filed Jun. 4, 1980, Ser. No. 156,287
Claims priority, application France, Jun. 5, 1979, 79 14297
Int. Cl.³ B64C *27/38*
U.S. Cl. 416—134 A 10 Claims

1. A rotary wing aircraft rotor comprising

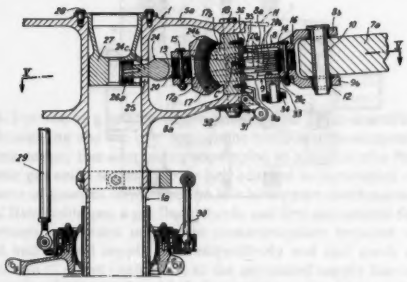
a compact articulated hub secured to a top part of a tubular strut rotating around a rotor rotation axis,

at least two blades connected to said hub, said hub having for each blade a pair of superposed radial arms connected to a corresponding blade root by means of a single spherical laminar abutment including an alternating stack of

rigid and elastomer strips in the forms of spherical caps secured together,

a yoke including two rigid plates, the radial outer ends of which form a fork to which said corresponding blade root is secured by at least a pin wherein each of said two rigid yoke plates has a radial inner recessed part having a wide aperture, said radial inner recessed parts being held apart by means of at least one radial inner and one radial outer tubular spacers,

and said spherical laminar abutment is fitted into said apertures of said yoke plates, with a concave portion of said spherical abutment being mounted on a radial outer rigid fitting prolonged towards the center of said spherical abutment by a radial outer component extending through said apertures and secured between the radial outer ends of said radial arms, and a convex portion of said spherical abutment being mounted on a radial inner rigid fitting bearing against the corresponding inner edges of said



apertures of said yoke plates, and wherein, for each blade a flat annular visco-elastic shock-absorber is inserted between said corresponding two rigid yoke plates so as to surround said single spherical abutment,

said flat annular visco-elastic shock absorber including an alternating stack of at least two rigid plates and at least one layer of a visco-elastic material having great rigidity and high remanence to deformation, each layer of said visco-elastic material being secured between and to two of said shock-absorber rigid plates,

and said shock-absorber being disposed between and journaled on two arms of a stirrup-shaped component connected to a top end of a blade pitch control link so that beat or flap drag and pitch motions of each blade are allowed by elastic-deformation of said elastomer strips of said single spherical laminar abutment and that said shock absorber produces an elastic return and a damping action on the drag motion of said corresponding blade.

4,361,416

ROTOR FOR AXIAL-FLOW TURBOMACHINES

Axel Rossmann, Karlsfeld, Fed. Rep. of Germany, assignor to Motoren- und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

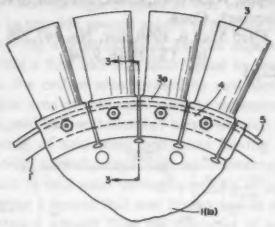
Filed Apr. 14, 1980, Ser. No. 140,015

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1979, 2915286

Int. Cl.³ F01D 5/30

U.S. Cl. 416—218 **6 Claims**

1. In a rotor for axial-flow turbomachines having radially slotted blade roots; a radially extending web of a rotor component; segments arranged in axial sequence in the split blade root; an axial bolt interconnecting said blade root with said web and said segments primarily for assuming circumferential forces; a common coaxial retaining ring circumferentially encompassing said segments for the assuming of radial forces, said retaining ring having a corresponding curvature and being constituted of a material selected from the group consisting of boron, glass or carbon fibers embedded in a heat-resistant matrix, the improvement comprising: a rotor component having a coaxially extending cylindrical circumferential surface, at



least a portion of the common cylindrical inner surfaces of the split blade root and of the common cylindrical inner surfaces of the segments bearing against said circumferential surface.

4,361,417

OIL-COOLED COMPRESSOR

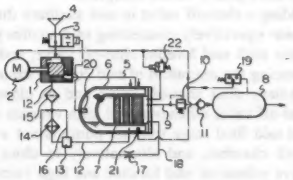
Toshitsugu Suzuki, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo and Tokico Ltd., Kanagawa, both of, Japan

Filed Jun. 2, 1980, Ser. No. 155,087

Claims priority, application Japan, Jun. 12, 1979, 54-73820

Int. Cl.³ F04B 49/06

U.S. Cl. 417—13 **5 Claims**



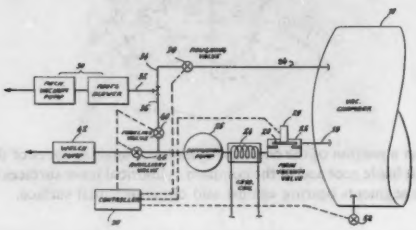
1. An oil-cooled compressor system comprising a compressor driven by a motor for compressing gas and being cooled by oil, an oil tank having an oil separator for removing oil from the gas which has been compressed in the compressor and discharged therefrom, oil in said oil tank being supplied to a suction side of said compressor, a means for throttling gas sucked into said compressor when the pressure of the gas discharging from said compressor exceeds a predetermined first pressure, a pressure switch acting at a second predetermined pressure of the gas at a different point in said system downstream of said compressor, said second pressure being lower than said first pressure, a temperature switch means which operates when the temperature of said oil in said oil tank exceeds a predetermined temperature, and a circuit connected to said pressure switch and said temperature switch means for controlling the operation of said motor so as to stop said motor when the pressure of the gas discharging from said compressor exceeds said second pressure and when the temperature of the oil exceeds said predetermined temperature.

4,361,418

HIGH VACUUM PROCESSING SYSTEM HAVING IMPROVED RECYCLE DRAW-DOWN CAPABILITY UNDER HIGH HUMIDITY AMBIENT ATMOSPHERIC CONDITIONS

Andrew Tscheppe, Watertown, Conn., assignor to Risdon Corporation, Naugatuck, Conn.

Filed May 6, 1980, Ser. No. 147,205
Int. Cl.³ F04F 9/04
U.S. Cl. 417—54 9 Claims



1. In processing work products in a high vacuum work chamber which is repeatedly opened and closed to atmosphere in loading said products into and unloading them from said chamber, wherein there are employed in conjunction with said chamber first stage and final stage vacuum pump means, a roughing vacuum duct and a shut-off valve therein communicating said first-stage pump with said chamber, and a high vacuum duct and shut-off valve therein communicating said final stage vacuum pump with said chamber, a foreline duct and shut-off valve therein interconnecting the exhaust side of said final stage pump with the vacuum side of said first stage pump, an auxiliary pump and auxiliary vacuum duct connecting said auxiliary pump into said foreline duct between said final-stage pump and foreline shut-off valve, the method of improving the recycle rate of vacuum chamber draw-down after loading said work products into said chamber and closing same to atmosphere which comprises

providing a shut-off valve in said auxiliary duct and control means operatively connecting said auxiliary duct shut-off valve with said foreline shut-off valve; and

sequencing the operation of said control means to open said auxiliary duct shut-off valve and to close said foreline shut-off valve whenever said high vacuum valve is closed and said final stage vacuum pump is not evacuating said work chamber, and alternatively to close said auxiliary valve whenever said foreline and high vacuum valves are opened to evacuate said work chamber.

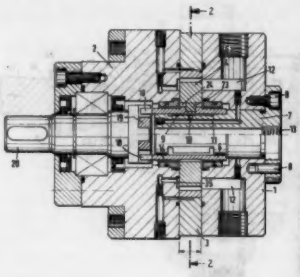
6. In high vacuum processing apparatus incorporating a work chamber adapted to be repeatedly opened to atmosphere for loading, processing and unloading products treated in the chamber, first stage and final stage vacuum pumps, a roughing duct and a roughing duct shut-off valve therein connecting said first stage vacuum pump to said chamber, and a high vacuum duct and a high vacuum duct shut-off valve therein connecting said final stage vacuum pump to said chamber, a foreline duct and foreline shut-off valve therein interconnecting the exhaust side of said final stage pump to said roughing duct between said roughing duct shut-off valve and said first stage pump, and an auxiliary vacuum pump and auxiliary duct connected to said foreline between said foreline shut-off valve and said final stage pump, the improvement which comprises providing a shut-off valve in said auxiliary duct and control means operatively associated with said foreline and auxiliary duct shut-off valves, said control means adapted and arranged to close one of said foreline and auxiliary valves when the other is opened, and vice versa.

4,361,419

GEROTOR LIQUID PUMP MOUNTED ON A SUPPORT BUSHING

Karl Vöhringer, Kuppenheim, Fed. Rep. of Germany, assignor to Volksbank-Raiffeisenbank Buhl e.G., Buhl, Fed. Rep. of Germany

Filed Aug. 8, 1979, Ser. No. 64,696
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1978, 2834735
Int. Cl.³ F04C 2/10, 13/00, 15/00
U.S. Cl. 418—73 6 Claims



1. A liquid pump for liquids having a low viscosity, including water, alcohols or other chemicals of the type which includes a gear unit mounted in a housing which has an outer gear and an inner gear eccentrically mounted with respect to said outer gear forming variable spaces between the gear teeth, said inner gear being driven by a shaft, the improvement comprising:

(a) a bushing on which said inner gear of said gear unit is mounted, the length of said bushing in the axial direction being longer than the width of said inner gear, said bushing also having axially extending bores therethrough so that an oil exchange takes place between the bushing sides through said bores,

(b) pump coupling chambers in said housing for the pressure and suction sides of the pump disposed on one axial side of said gears,

(c) relief pockets formed in said housing on the other axial side of said gears, which communicate with said pump coupling chambers via said spaces between said teeth of said outer and inner gears,

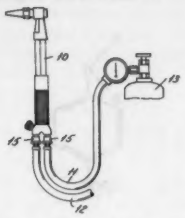
(d) a central support bolt on which said bushing is mounted having hydrostatic support pockets formed in the peripheral surface thereof beneath said bushing and conduit means for connecting said support pockets to the pump coupling chambers, the length of said support pockets in the axial direction being longer than the axial width of said inner gear, the lengths of said bushing and support pockets being determined by the required hydrostatic support forces in such a manner that the support forces lie directly in the effective plane of the hydraulic radial forces, said support bolt also having a central bore for carrying out any leakage discharge.

4,361,420

GAS FLAME TORCH SYSTEM WITH FLASH ARRESTERS

Theodore F. Bell, 400 Fentress Blvd., Daytona Beach, Fla. 32014

Division of Ser. No. 42,132, May 24, 1979, Pat. No. 4,246,002, which is a continuation of Ser. No. 874,807, Feb. 3, 1978, abandoned, which is a continuation of Ser. No. 710,861, Aug. 2, 1976, abandoned. This application Nov. 5, 1980, Ser. No. 204,336
The portion of the term of this patent subsequent to Jan. 20, 1998, has been disclaimed.
Int. Cl.[3] F23D *13/46*
U.S. Cl. 431—346 4 Claims



1. For use in a system where combustible gases are utilized as in welding and the like, a gas flame torch system comprising a first supply line adapted to be coupled to a source of a flammable gas and a second supply line adapted to be coupled to a source of gaseous oxygen or the like to support combustion of said flammable gas, a gas flame torch, and first and second flash arresters interposed in gaseous communication between said first and second supply lines respectively and said torch and operable to arrest flash backs to the associated supply line on a repetitive basis, each said flash arrester comprising a main body, a ball cage body, a ball seat member and a lightweight ceramic ball, said main body, ball cage body, ball seat member and ceramic ball being made of a material capable of withstanding welding flame temperatures, said main body having an opening extending axially therethrough, said ball cage body being fixedly secured within said through opening of said main body with a close fit therein, said ball cage body having an axial passage therethrough defined at one end by axially extending slots to provide spaced axially extending fingers, each said finger having a frusto-conical surface adjacent the base thereof defining a first ball seat interrupted by spaces formed by said slots, the orifice area formed by said slots being less than the orifice area of said axial passage downstream of said first ball seat, said ball seat member being secured in said axial through-opening of said main body and having an opening extending axially therethrough with an uninterrupted frusto-conical surface in said axial through-opening of said ball seat member defining a second ball seat juxtaposed to said first ball seat by a distance greater than the diameter of said ball and being defined by forced abutment of the free ends of said fingers with said ball seat member whereby said fingers extend along the travel path of said ball to guide free movement of the same between said seats and said ball remains partially in said ball cage body when seated on said second ball seat, said ceramic ball having substantially the same diameter as the opening defined radially between and adjacent said fingers and a greater diameter than that of said axial passage downstream of said first ball seat, the interior space between said first and second ball seats being empty except for said ceramic ball such that said ceramic ball is freely movable axially between said second and first ball seats to thereby function as a lightweight, wear and flame resistance flash arresting back check valve without the use of a valve biasing spring, said opening through said ball seat member including a screen interposed therein upstream of said second ball seat and retaining means holding said screen in position therein, said screen and retaining means being made of a material capable of withstanding welding temperatures.

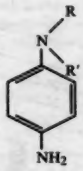
4,361,421

HAIR-DYEING COMPOSITIONS BASED ON PARA-PHENYLENEDIAMINES

Andree Bugaut, Boulogne-Billancourt, and Ginette Jeanminet, Aulnay-sous-Bois, both of France, assignors to L'Oreal, Paris, France

Filed Jul. 8, 1980, Ser. No. 167,146
Claims priority, application France, Jul. 10, 1979, 79 17888
Int. Cl.³ A61K 7/13
U.S. Cl. 8—407 9 Claims

1. A composition suitable for dyeing hair which contains, in a cosmetically acceptable medium, para-phenylenediamine or a cosmetically acceptable salt thereof and one or more compounds corresponding to the formula (I)



in which R denotes an alkyl or hydroxyalkyl group and R' denotes a hydroxyalkyl group, the alkyl groups having 2 to 4 carbon atoms, or a cosmetically acceptable salt thereof, in a molar ratio para-phenylenediamine/compound(s) of the formula (I) which is about 0.5:1 in the case the composition contains para-phenylenediamine in an amount of 1.5 to 2.5% by weight and does not exceed 1:1 and is not less than 0.5:1 in the case para-phenylenediamine is present in an amount of 0.2 to 1.5% by weight.

8. Process for dyeing the hair, which comprises mixing a composition as defined in claim 1 with an oxidising agent, applying the resulting mixture to the hair for 10 to 30 minutes, rinsing the hair, optionally washing and rinsing it again, and drying it.

9. Process for dyeing the hair, which comprises applying thereto a composition as defined in claim 1 and after the hair has been impregnated, a dyeing composition containing a nitrobenzene direct dyestuff is applied.

4,361,422

HYDROGENATION AND ETHERIFICATION OF AN UNSATURATED C_5 HYDROCARBON CUT TO INCREASE ITS OCTANE NUMBER AND DECREASE ITS MONO-OLEFIN CONTENT

Michel Derrien, Rueil Malmaison; Jean Cosyns, Maule, and Bernard Torck, Boulogne sur Seine, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Mar. 10, 1981, Ser. No. 242,218
Claims priority, application France, Mar. 10, 1980, 80 05365
Int. Cl.³ C10L 1/18
U.S. Cl. 44—56 17 Claims

1. A process for producing a gasoline fraction of high motor octane number and low olefins content from a C_5 unsaturated fraction comprising at least 10% by weight of a mixture (A) comprising 2-methyl-1-butene and 2-methyl-2-butene; and at least 10% by weight of a mixture (B) comprising the C_5 mono-olefins other than those of mixture (A), comprising the steps of:

catalytically hydrogenating the C_5 unsaturated fraction in such a manner as to convert at least 30% of mixture (B) to saturated hydrocarbons while limiting the conversion of mixture (A) to saturated hydrocarbons to at most 10%; and

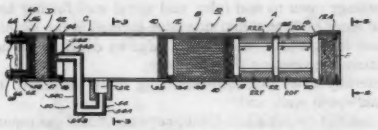
etherifying at least a portion of the 2-methyl-1-butene and 2-methyl-2-butene in the resultant effluent with an aliphatic C_{1-4} alcohol.

4,361,423

COMBINATION ACOUSTICAL MUFFLER AND EXHAUST CONVERTER

Albert E. Nitz, Milwaukee, Wis., assignor to NKN, Milwaukee, Wis.

Filed Nov. 3, 1980, Ser. No. 203,332
Int. Cl.³ B03C 1/08; B01D 50/00; F01N 7/02
U.S. Cl. 55—100 11 Claims



1. A combination acoustical muffler and exhaust converter for use with internal combustion engines, comprising:

A. an elongated hollow cylinder having an inlet end to receive exhaust gas, and having an outlet end;

B. sets of filtering means positioned at a plurality of longitudinally spaced locations within the cylinder for filtering exhaust gas flowing therethrough and for partitioning the cylinder into a number of chambers arranged in series flow relation with one another, said filtering means being arranged and constructed to have a silencing action on the gas flowing through the cylinder without interfering with substantially straight axial gas flow therethrough, and each such set of filtering means comprising

(1) a number of screen discs of different size mesh extending across the interior of the cylinder,

(2) and the screen discs of each set of filtering means being arranged in a stack in contiguous relation to one another;

C. packing material means in one of said chambers for condensing moisture in the exhaust gas and for removing hydrocarbon therefrom, said packing material means being comprised of fibers all disposed longitudinally of the cylinder;

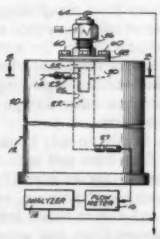
D. and means confined between two adjacent sets of screen discs which define a second one of said chambers, for removing carbon monoxide from the exhaust gas, said last named means extending completely across the interior of the cylinder.

4,361,424

GAS SEPARATING DEVICE

Richard R. Henszey, 4646 N. Hewitts Rd., Oconomowoc, Wis.

Filed Feb. 2, 1981, Ser. No. 230,900
Int. Cl.³ B01D 19/00
U.S. Cl. 55—205 7 Claims



1. A device for separating gas from a liquid sample stream containing gas comprising

a housing defining an elongated vertical chamber having a circular cross section and top and bottom portions;

a tangential fluid inlet in said housing for introducing the sample stream into the top portion of said chamber;

a tangential liquid outlet in said housing through which the liquid portion of the sample flows from the bottom portion of said chamber;

an elongated, tubular-like gas separator unit generally centrally located in the top portion of said chamber, said gas separator unit including a lower end opening into said chamber and an upper end and further including a spirally extending wall having an outer surface spaced radially inwardly from the chamber wall to define an annular passage open to said inlet, said spiral wall further having an inner surface, a first side edge located in the vicinity of said inlet, and a second side edge to define a vertically extending opening therebetween;

a laterally extending anti-vortexing baffle disposed inside said spiral wall; and

a gas outlet opening into the upper end of said gas separator unit and including a gas flow restricting means, whereby the sample stream entering through said inlet initially flows circumferentially through said annular passage, a substantial portion of the gas bubbles in the sample is separated therefrom and enters into said gas separator unit through said vertical opening, and the gas separated from the sample and collecting inside said gas separator unit exits through said gas outlet with said flow restricting means minimizing the overflow of liquid through said gas outlet.

4,361,425

DEHUMIDIFIER

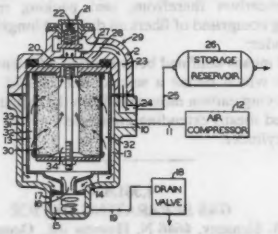
Yasuhisa Hata, Akashi, Japan, assignor to Nippon Air Brake Co., Ltd., Kobe, Japan

Filed May 26, 1981, Ser. No. 267,129

Claims priority, application Japan, Jun. 14, 1980, 55-83179[U]

Int. Cl.³ B01D *45/12*

U.S. Cl. 55—218 **5 Claims**



1. A dehumidifier for use in an air compressor system in which an air compressor supplies compressed air to a storage reservoir and a drain valve exhausts accumulated moisture to atmosphere, said dehumidifier comprising:

(a) a housing having an inlet connected to the air compressor and an outlet connected to the storage reservoir; said housing further having formed at a lower portion thereof, a separating chamber, said separating chamber accumulates the moisture and other foreign matter until an exhaust operation occurs;

(b) passage means formed in said housing via which compressed air may flow from said inlet to said outlet;

(c) a tubular member interposed in and forming a part of said passage means with said housing, said tubular member having an inlet and a vane means interposed in said passage means upstream from said separating chamber for imparting a swirling motion to such air flow and directing such swirling air flow into said separating chamber thereby separating moisture and particulate material from such compressed air flow and passing the compressed air into the inlet of the tubular member; and

(d) a body of desiccant material interposed in said tubular member and in said passage means for intercepting compressed air flowing therethrough and removing residual moisture therefrom.

4,361,426

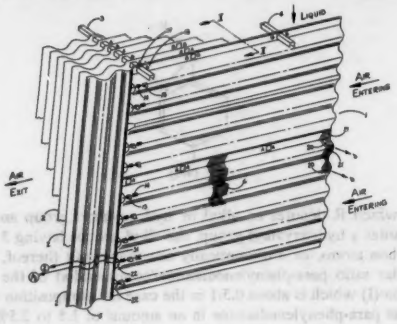
ANGULARLY GROOVED CORRUGATED FILL FOR WATER COOLING TOWER

Thomas P. Carter, Laurel; Robert E. Cates, Arnold; Richard H. Harrison, Jr., Columbia, and Edward N. Schinner, Highland, all of Md., assignors to Baltimore Aircoil Company, Inc., Jessup, Md.

Filed Jan. 22, 1981, Ser. No. 227,302

Int. Cl.³ B01F *3/04*

U.S. Cl. 55—257 PV **4 Claims**



1. A fill sheet of formable material having therein horizontal sinusoidal corrugations with angular grooves of variable depth with a generally zigzag spiral pattern throughout with nearly horizontal water cooling pockets an angle of about 15° to the horizontal at the sinusoidal point of inflection between each corrugation, having a pair of opposed sides adapted for coverage by heated water flowing thereover and having an integrally-formed near-vertically corrugated mist eliminator at an air exit end of said sheet.

4,361,427

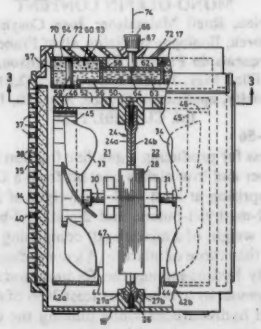
AIR FRESHENER

George Barradas, Greenwich, Conn., assignor to Appliance Design Probe Inc., Scarborough, Canada

Filed Nov. 18, 1981, Ser. No. 322,518

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—279 **4 Claims**



1. An air filtration apparatus comprising:

a housing,

an internal vertical partition substantially centrally within said housing to divide the same into two chambers,

an electrical motor mounted on said partition and having

coaxial drive shafts extending horizontally to both sides of said partition,

an air propelling fan mounted on each drive shaft within each chamber,

intake louvre means in the housing outwardly adjacent each fan,

a filter panel between each louvre means and the corresponding fan,

an air outlet in the housing above the chambers, and

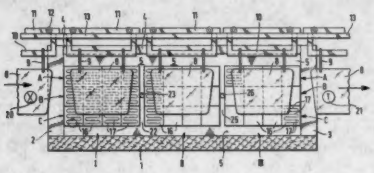
air filtering means above the chambers but below the air outlet, the air filtering means including a central container for a scent-producing liquid, an outlet from said central container, stopper means for manually opening and closing said outlet, and a further chamber surrounding said central container, the further chamber containing filter media and having inlet and outlet means by which air from said two first-mentioned chambers can pass through said further chamber and media.

4,361,428

PROCESS AND APPARATUS FOR REGULATING THE TEMPERATURE OF A GLASS SHEET IN A MULTI-CELL FURNACE

Karl R. Bartusel, Stolberg; Mario Roth, Aachen; Walter Schamberg, Herzogenrath, and Josef Willems, Alsdorf Hoengen, all of Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage, France

Filed Jul. 31, 1981, Ser. No. 288,808
Claims priority, application France, Aug. 6, 1980, 8017345
Int. Cl.³ C03B *29/04*
U.S. Cl. 65—29 **18 Claims**



1. A process for regulating the temperature of a glass sheet in a furnace having several successive cells capable of fast thermal response comprising moving the sheet, in vertical orientation, at a determined rate from cell to cell and heating the sheet at a bending and/or tempering temperature, substantially simultaneously regulating the heating power in each cell at a fixed level, according to a preestablished program and as a function of the wall temperature of each cell, checking the presence of the glass sheet in synchronization with the step-by-step advance upstream at least in one cell of the furnace, and providing a signal which serves as a correction signal to correct the regulation of the power supplied to the following cells.

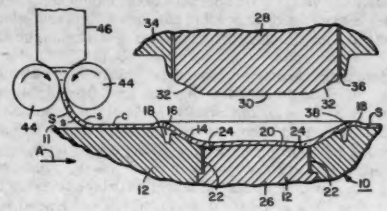
16. Apparatus for regulating the temperature of a glass sheet in a furnace having an entrance opening, an exit opening and several successive cells capable of fast thermal response located along the wall of the furnace between the openings, a frame located above the furnace, support means for supporting the glass sheet in a vertical orientation, the support means being mounted on the carriage which, in turn, is movable stepwise along the frame at a determined rate for likewise moving the glass sheet along a path of movement within the furnace from cell to cell, heating means within the furnace for heating the glass sheet at a bending and/or tempering temperature, regulating means controlling the heating power of each cell at a fixed level according to a preestablished program and as a function of the temperature of a wall of a cell, and responsive means providing a signal in synchronization with the stepwise advance indicative of the presence of a glass sheet upstream at least in one cell of the furnace, and wherein the signal also serves as a correction signal in the regulation of the heating power supplied to a downstream cell.

4,361,429

METHOD AND APPARATUS FOR PRESSING GLASS ARTICLES

Elmer L. Anderson, Corning; Kenneth L. Goodrich, Beaver Dams, and Robert C. Hillman, Rock Stream, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Sep. 17, 1981, Ser. No. 303,002
Int. Cl.³ C03B *11/00, 13/00*
U.S. Cl. 65—67 **12 Claims**



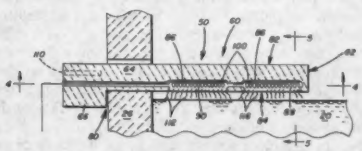
1. A method of pressing glass articles from molten glass which comprises, delivering a sheet of molten glass to a surface of a mold assembly having a mold cavity formed therewithin so as to overlie the mold cavity and the surrounding surface of the mold assembly, initially permitting said sheet of molten glass to substantially conform to the contour of said mold cavity, then pressing said contoured sheet within said mold cavity while still in a semi-molten condition into an article of desired upper and lower surface configuration, trimming the glass within said mold cavity from the remainder of the sheet deposited upon surrounding surface portions of the mold assembly, and removing said completed article from said mold cavity.

4,361,430

METHOD OF AND APPARATUS FOR SELECTIVELY HEATING MOLTEN GLASS STREAM MARGINAL EDGES

Harry S. Koontz, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 20, 1981, Ser. No. 265,295
Int. Cl.³ C03B *18/10*
U.S. Cl. 65—99.5 **20 Claims**



1. In a method of passing a stream of molten glass through a chamber having side walls, a roof and a bottom, wherein heat losses along the side walls cause the glass stream to cool more rapidly in side portions than in center portions, the improvement comprising:

directing heat at a first rate onto the surface of a first side portion of the glass stream adjacent to a side wall from a first horizontally extending array of electrical heater elements spaced closely above the glass surface;

directing heat at a second rate lower than the first rate onto the surface of a second side portion of the glass stream between the first side portion and the center of the stream from a second horizontally extending array of electrical heater elements spaced closely above the glass surface; and

reflecting heat from the first and second heater arrays down-

wardly by means of a heat reflecting member above the heater arrays and spaced below the roof of the chamber; whereby thermal uniformity in the direction transverse to the direction of glass motion is improved.

11. In a chamber through which a stream of molten glass flows from a melting section of a furnace to a forming chamber, having opposed side walls, a roof and a bottom, means for improving lateral thermal uniformity of the glass stream comprising: edge heater means extending horizontally from the side walls and overlying side portions of the molten glass in the chamber at an elevation above and closely adjacent to the level of molten glass in the chamber; each edge heater means including:

a substantially planar horizontal refractory heat reflector member spaced below the chamber roof, first and second horizontally extending arrays of electrical heating elements supported below the reflector member, the first and second arrays being spaced apart laterally with respect to the direction of glass flow, with the first array adjacent to the side wall and the second array toward the center of the chamber, first and second electrical leads independently connecting the first and second arrays to independently controllable electrical power sources.

4,361,431

METHOD OF FORMING THIN SHEET GLASS BY FLOAT PROCESS

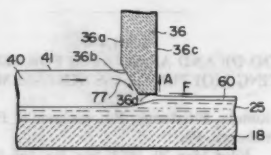
Takayoshi Kandachi; Keizi Sueda, and Minoru Suzuki, all of Matsusaka, Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Oct. 23, 1981, Ser. No. 314,401

Claims priority, application Japan, Oct. 27, 1980, 55-150921; May 14, 1981, 56-72424; May 20, 1981, 56-76085

Int. Cl.³ C03B *18/02*

U.S. Cl. 65—99.5 **18 Claims**



1. In a method of forming a relatively thin sheet of glass in a glass forming chamber which includes a molten metal bath constituted of a bottom structure, two opposite side walls, a molten glass inlet structure at one end and a sheet glass outlet structure at the other end and a roof structure defining an interior space above said molten metal bath, the method having the steps of feeding molten glass onto the surface of the molten metal in said bath, causing the molten glass to spread on the surface of said molten metal bath to form a layer of the molten glass, stretching the molten glass layer in a direction substantially parallel to said side walls so as to reduce the thickness of said layer and advance said layer towards said outlet structure, and cooling the thinned molten glass layer;

the improvement comprising the steps of:

providing a sluice-forming wall in said interior space at a distance downstream from said inlet structure so as to extend widthways of said molten metal bath and leave a vertically narrow gap between a lower end of said sluice-forming wall and the surface of the molten metal in said bath thereby producing a pool of the molten glass on the molten metal in a region between said inlet structure and said sluice-forming wall, a front side of said sluice-forming wall facing said pool being formed with a slant surface contiguous to said lower end of said wall such that the surface of the molten glass in said pool intersects said slant surface and that the vertical distance of said slant surface from the surface of the molten metal decreases as the horizontal distance of said slant surface from said inlet structure increases, the rear side of said sluice-forming wall being formed with a vertical surface contiguous to said lower end of said wall; and

forming said layer of the molten glass by causing the molten glass to flow out of said pool through said vertically narrow gap.

4,361,432

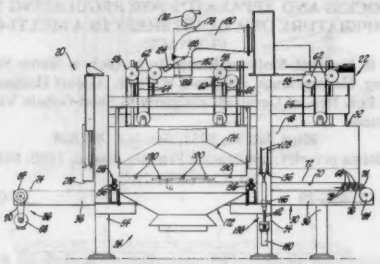
APPARATUS AND METHOD FOR REMOVING A GLASS SHEET FROM A CARRIER

Harold A. McMaster, 420 Water St., Woodville, Ohio 43469; Norman C. Nitschke, 9102 Buck Rd., and John S. Nitschke, 324 E. Second, both of Perrysburg, Ohio 43551

Division of Ser. No. 118,822, Feb. 5, 1980, abandoned, which is a continuation of Ser. No. 872,201, Jan. 25, 1978, abandoned. This application May 14, 1981, Ser. No. 263,436

Int. Cl.³ C03B *27/00*

U.S. Cl. 65—104 **8 Claims**



1. Apparatus for handling a glass sheet comprising: an open center ring for transporting the glass sheet in a generally horizontally extending orientation; means for effecting a differential gas pressure at the upper and lower surfaces of the glass sheet so as to lift the glass sheet upwardly off the open center ring; and means above the ring for receiving the lifted glass sheet therefrom.

5. A method for handling a glass sheet comprising: transporting the glass sheet in a generally horizontally extending orientation on an open center ring; effecting a differential gas pressure at the upper and lower surfaces of the glass sheet so as to lift the glass sheet upwardly off the ring; and suspending the lifted glass sheet at an elevation above the ring to permit movement of the ring from below the glass sheet.

4,361,433

METHOD OF BENDING A GLASS SHEET

W. Novis Smith, Jr., and Nelson P. Bolton, both of Quakertown, Pa., assignors to Advanced Glass Systems Corp., Trumbauersville, Pa.

Filed Mar. 24, 1981, Ser. No. 247,000

Int. Cl.³ C03B *23/03*

U.S. Cl. 65—116 **8 Claims**

1. A method of shaping a glass part comprising the steps of:

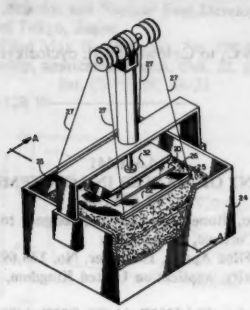
(a) supporting the glass on a first flexible porous member;

(b) immersing the first flexible porous member and supported glass in a hot liquid bath, the bath being of a composition that is a solid at room temperature and a liquid at the softening temperature of the glass, whereupon the glass part is softened by heating via contact with the hot liquid bath;

(c) drawing the first flexible porous member over a form of a desired shape while immersed in the bath by pulling at least one edge of the member over the form, whereupon the glass deforms to the desired shape, the glass and porous member held in full surface contact and the flexible

porous member spreading forming forces evenly over the glass;

(d) removing the glass part, first flexible porous member and form from the hot liquid bath as a unit, the glass part, porous member and form remaining in full surface contact, whereupon the glass part and bath composition



clinging to the glass part and flexible porous member begin to cool, the glass and the bath composition thereupon hardening; and,

(e) removing the first flexible porous member from the glass part after the glass has cooled below its softening temperature, thereby also removing the bath composition clinging to the glass.

4,361,434

COOLING ARRANGEMENT FOR GLASS WARE FORMING TOOLS

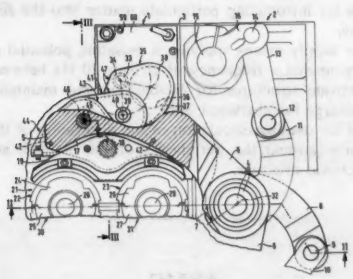
Wilhelm Schneider, Auetal, Fed. Rep. of Germany, assignor to Hermann Heye, Obernkirchen, Fed. Rep. of Germany

Filed Sep. 23, 1981, Ser. No. 304,976

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1980, 3040311

Int. Cl.³ C03B *9/38*

U.S. Cl. 65—265 **14 Claims**



1. A cooling arrangement for use in a machine for treating a thermoplastic material, especially molten glass, for cooling a split forming tool, parts of which are mounted on the machine for pivoting about a first pivoting axle, by a pressurized cooling fluid, especially air, comprising at least one supply conduit stationarily mounted on the machine for supplying the cooling fluid; at least one fluid distributing means mounted for joint pivoting with the forming tool parts about said first pivoting axle; and at least one articulated connecting conduit each including at least two components which are respectively pivotable relative to said supply conduit and to said fluid distributing means and which are pivotable relative to one another.

4,361,435

COPPER AND AMINE BASED AQUATIC HERBICIDES

Marion D. Meyers, and Graham A. Stoner, both of Houston, Tex., assignors to Sandoz, Inc., East Hanover, N.J.

Continuation of Ser. No. 443,493, Feb. 19, 1974, abandoned. This application Aug. 21, 1978, Ser. No. 935,594

Int. Cl.³ A01N *33/04, 59/20*

U.S. Cl. 71—66 **15 Claims**

1. A method for combatting aquatic weeds growing in waters, comprising dispersing in said waters an aqueous solution of a water soluble complex of a divalent copper salt and an amine of the formula:

R—RN—ALK—NRR

wherein ALK is alkylene of 2 or 3 carbon atoms and each R is independently hydrogen, methyl or ethyl, the amine to copper mol ratio being from 1:1 to 10:1, in an amount sufficient to provide on the basis of said waters a copper concentration of from 0.1 to 10.0 ppm, and thereby contacting said weeds with a herbicidally effective amount of said complex.

4,361,436

COMPOSITION FOR PLANT GROWTH REGULATION

Robert F. McCarthy, Redbank, and Jonathan M. Kliegman, Wayne, both of N.J., assignors to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 833,757, Sep. 16, 1977, abandoned. This application Jun. 26, 1980, Ser. No. 163,441

Int. Cl.³ A01N *57/12*

U.S. Cl. 71—86 **19 Claims**

1. A plant growth regulating composition consisting essentially of an ethylene-generating amount of a 2-haloethylphosphonic acid selected from the group consisting of 2-haloethylphosphonic acid, 2-haloethylphosphonic acid anhydride and 2-haloethylphosphonic catechol ester and mixtures thereof, and a N-heterocyclic amide selected from the group consisting of N-methylpyrrolidone, polyvinylpyrrolidone, pyrrolidone, and N-methylpiperidone in an amount sufficient to promote the ethylene-generating, plant growth regulating effect of said 2-haloethylphosphonic acid compound.

4,361,437

3-THIOOXO-5-OXO-HEXAHYDRO-1,2,4-TRIAZINE AND ITS PRODUCTION AND USE

Shunichi Hashimoto, Sonehigashi; Hiromichi Oshio, Osaka; Masato Mizutani, Kyoto; Yuzaru Sanemitsu, Ashiya; Haruhiko Katoh, Takarazuka; Seizo Sumida, Nishinomiya, and Tadashi Ooishi, Sonehigashi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 17, 1981, Ser. No. 235,123

Claims priority, application Japan, Feb. 19, 1980, 55-19913

Int. Cl.³ C07D *253/06;* **A01N** *43/64*

U.S. Cl. 71—93 **3 Claims**

1. 3-Thiooxo-5-oxo-hexahydro-1,2,4-triazine.

2. A herbicidal composition comprising a herbicidally effective amount of 3-thiooxo-5-oxo-hexahydro-1,2,4-triazine as an active ingredient and an inert carrier or diluent.

4,361,438

SUBSTITUTED CYCLOPROPYL METHOXY PHENYL UREAS AND THE HERBICIDAL USE THEREOF

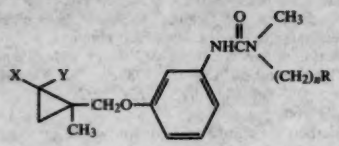
Raymond A. Felix, Richmond, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jan. 21, 1981, Ser. No. 227,017

Int. Cl.³ A01N *9/20;* **C07C** *103/19, 103/127, 103/133*

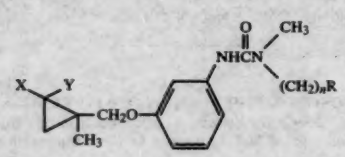
U.S. Cl. 71—98 **35 Claims**

1. A compound having the formula



in which X and Y are halogen; R is cyano, halogen, thio-C_1–C_4 alkyl, phenyl, pyridyl, hydroxy, or OR_1; R_1 is C_1–C_4 alkyl, C_1–C_4 mono- or di-alkylcarbamyl, C_2–C_6 alkoxyalkyl, phenylcarbamyl, C_1–C_6 alkanoyl or C_1–C_6 haloalkanoyl; and n is: (a) 1 or 2 if R is thioalkyl, cyano or phenyl; and (b) 2 if R is otherwise as defined.

21. A method of controlling undesirable vegetation comprising applying to the vegetation or the locus thereof a herbicidally effective amount of a compound having the formula



in which X and Y are halogen; R is cyano, halogen, thio-C_1–C_4 alkyl, phenyl, pyridyl, hydroxy, or OR_1; R_1 is C_1–C_4 alkyl, C_1–C_4 mono- or di-alkylcarbamyl, C_2–C_6 alkoxyalkyl, phenylcarbamyl, C_1–C_6 alkanoyl, or C_1–C_6 haloalkanoyl; and n is: (a) 1 or 2 if R is thioalkyl, cyano or phenyl; and (b) 2 if R is otherwise as defined.

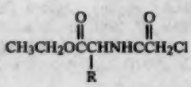
4,361,439

METHOD OF INCREASING THE YIELD OF LEGUMES UTILIZING CHLOROACETYL-AMINOACID ETHYL ESTERS

Llewellyn W. Fancher, New Castle, and Francis H. Walker, Mill Valley, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 26, 1981, Ser. No. 296,599
Int. Cl.³ A01N *37/46*; C07C *103/50*
U.S. Cl. 71—106 **8 Claims**

1. A method of increasing the yield of legumes comprising applying thereto a yield-increasing amount of a compound of the formula



wherein R is selected from the group consisting of —H, $—CH_3$, $—C_2H_5$ and $—C_3H_7$.

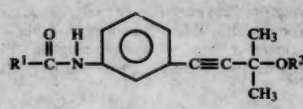
4,361,440

M-ALKYNYLANILIDES AND USE AS HERBICIDES

Edward T. Sabourin, Allison Park, and Charles M. Selwitz, Monroeville, both of Pa., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Division of Ser. No. 140,645, Apr. 16, 1980, Pat. No. 4,305,751. This application Aug. 31, 1981, Ser. No. 297,641
Int. Cl.³ A01N *37/18*; C07C *103/19, 103/34*
U.S. Cl. 71—118 **7 Claims**

1. Compounds having the general structural formula



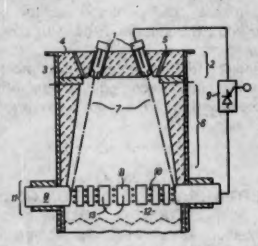
in which R^1 is C_1 to C_4 lower alkyl, cycloalkyl and R^2 is H.

4,361,441

TREATMENT OF MATTER IN LOW TEMPERATURE PLASMAS

Jozef K. Tylko, Stoneleigh, England, assignor to Plasma Holdings N.V., Curacao, Netherlands

Filed Apr. 7, 1980, Ser. No. 138,693
Claims priority, application United Kingdom, Apr. 19, 1979, 7913337
Int. Cl.³ H05B *11/00*; C22B *4/00*
U.S. Cl. 75—10 R **15 Claims**



1. Apparatus for treating particulate matter with low temperature plasma, comprising:

a pair of stationary electrode structures at least one of which is generally annular, said electrodes being spaced apart to provide a reaction zone;

means for introducing particulate matter into the reaction zone;

power supply means applying a pulsating potential difference having a frequency of at least 50 Hz between the electrode structures for establishing and maintaining a discharge therebetween; and

means for causing circulation of the disposition of the discharge around the peripheries of the or each annular electrode structure.

4,361,442

VANADIUM ADDITION AGENT FOR IRON-BASE ALLOYS

Gloria M. Faulring, Niagara Falls; Alan Fitzgibbon, Lewiston, and Frank Slish, Grand Island, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

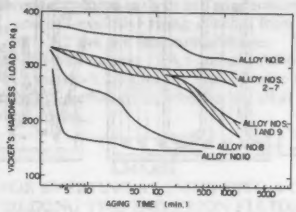
Filed Mar. 31, 1981, Ser. No. 249,444
Int. Cl.³ C21C *7/00*
U.S. Cl. 75—57 **7 Claims**

1. A method for adding vanadium to molten iron-base alloy which comprises immersing in molten iron base alloy an addition agent consisting essentially of an agglomerated, blended mixture of about 40 to 50% by weight of finely divided V_2O_5 with about 50 to 60% by weight of finely divided calcium-bearing material selected from the group consisting of calcium-silicon alloy, calcium carbide and calcium cyanamide.

4,361,443
SOLID SOLUTION STRENGTHENED IRON-BASE AUSTENITIC ALLOY

Susumu Isobe, Ibaraki; Hajime Nakajima, Mito; Tatsuo Kondo, Mito; Katsutoshi Watanabe, Mito; Yasukazu Ishida, Tokyo; Takeshi Okada, Tokyo, and Taiki Kobayashi, Tokyo, all of Japan, assignors to Japan Atomic Energy Research Institute and Power Reactor and Nuclear Fuel Development Corporation, both of Tokyo, Japan

Filed May 19, 1980, Ser. No. 150,944
Claims priority, application Japan, Oct. 22, 1979, 54/136082
Int. Cl.³ C22C *38/22*
U.S. Cl. 75—128 W **5 Claims**

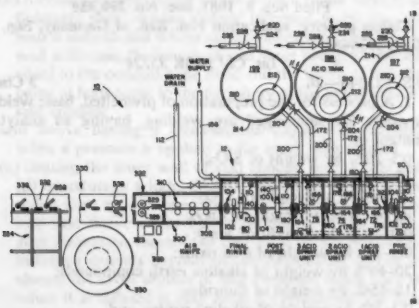


1. A solid solution strengthened iron-base austenitic alloy having remarkably improved strength and resistance to softening trends at elevated temperatures consisting essentially of 8–13.1% by weight of Cr, 14–30% by weight of Ni, 5–15% by weight of Mo plus 0.522 W, up to 1.0% by weight of Ti, up to 2% by weight of Mn, up to 1% by weight of Si, up to 0.1% by weight of C and the balance iron and unavoidable impurities.

4,361,444
SPRAY STRIP PICKLING OF UPRIGHT MATERIAL

Buford A. McClanahan; Herb W. Udolf, both of Albany; Charles R. Zander, Scio, and Robert W. Thresher, Albany, all of Oreg., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Continuation of Ser. No. 79,066, Sep. 26, 1979, abandoned. This application Mar. 20, 1981, Ser. No. 245,659
Int. Cl.³ B08B *3/08*; C23G *1/02*
U.S. Cl. 134—3 **10 Claims**



1. A process of spray pickling strip material to produce an even surface finish comprising steps of:
orienting a strip of material to have the two widthwise faces thereof in an essentially upright position;
moving said strip of material in a straight line at an essentially constant rate which rate falls in a range of between 0–30 feet per minute along the length dimension of such strip;
wiping said material strip;
spraying water at an angle of about 10 degrees from normal with respect to the material upright faces to pre-rinse both said wiped faces with water;
ultrasonically gauging the thickness of the pre-rinsed strip material;
spraying pickling acid onto both said pre-rinsed upright faces at an angle of about 20 degrees with respect to the material upright faces, said acid spraying step including three successive treatments with acid comprising spraying acid a first time onto said upright faces, removing at least some of said pickling acid from said faces by simultaneously wiping both said faces immediately after said acid spraying step, spraying acid a second time onto both said wiped faces, removing at least some of said pickling acid from both said faces by simultaneously wiping both said faces immediately after said second acid spraying step, spraying acid a third time onto both said wiped faces, and removing at least some of said pickling acid from both said faces by simultaneously wiping both said faces immediately after said third acid spraying step;
performing a post-rinse to remove acid from both said faces by spraying both said upright faces with water after wiping said acid therefrom in the last-mentioned wiping step, said spraying occurring as soon as possible after the last wiping step so that post-rinse of said strip occurs with essentially no exposure thereof to air between acid application and water rinse;
ultrasonically gauging the thickness of the strip material after said post-rinse spraying step;
drying said post-rinsed upright faces with air, said drying occurring quickly and uniformly to essentially prevent water spotting of the strip;
tensioning said strip material so that straight line passage through said rinsing, pickling and drying steps is maintained; and
storing the material after said drying step.

4,361,445
COPPER ALLOY CLEANING PROCESS

Michael J. Pryor, Woodbridge; Murray A. Heine, Hamden, and Andrew J. Brock, Cheshire, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation of Ser. No. 104,244, Dec. 17, 1979, abandoned, which is a continuation-in-part of Ser. No. 941,890, Sep. 13, 1978, abandoned. This application Jun. 26, 1981, Ser. No. 277,762
Int. Cl.³ C23G *1/02, 1/14*
U.S. Cl. 134—3 **10 Claims**

1. A process for cleaning the surface of a copper base alloy having a surface layer of thermally formed complex metal oxide of a refractory nature which is resistant to ferric sulfate, said process comprising immersing the said surface in an aqueous alkaline solution having a pH of 11 to 14 and heated to a temperature of about 40° C. to its boiling point for a period of two seconds to not more than ten minutes, and then immersing the said surface in 0.5 to 3 N. aqueous solution of ferric sulfate containing no added mineral acid at a temperature of 25° C. to 95° C. for a period of two seconds to not more than five minutes, said process being adapted to remove said surface layer from the copper base alloy surface when said surface layer has a thickness up to at least 160 A.

4,361,446
SPHERE LAUNCHING METHOD

Alfred D. Hogan, Tulsa, Okla., assignor to Geosource, Inc., Houston, Tex.

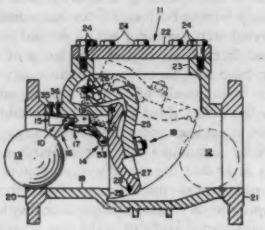
Division of Ser. No. 23,233, Mar. 23, 1979, Pat. No. 4,268,932. This application Oct. 20, 1980, Ser. No. 198,453
Int. Cl.³ B08B *9/02*
U.S. Cl. 134—8 **1 Claim**

1. A method for sequentially releasing spheres into a pipeline from a multiple sphere storage barrel in response to opening and closing of a valve closure member communicating the

storage barrel with the pipeline and engagement and disengagement of a sphere engaging means, comprising the steps of:

releasing a sphere from the releasing position in response to angular movement of an actuating means engaging the valve closure member and opening of the closure member;

engaging the next sphere with the sphere engaging means in the multiple sphere storage barrel in response to the movement and opening to prevent releasing of more than one sphere;



substantially closing the valve closure member before disengaging said next sphere in response to said closing;

disengaging the sphere engaging means from the next sphere by moving the sphere engaging means at a faster angular rate than the angular rate of the actuating means so that the sphere engaging means can be disengaged to release the next sphere after the valve member is substantially closed to position the next sphere for release upon opening of the closure member.

4,361,447

EXTRUSION-FORMED URANIUM-2.4 WT. % ARTICLE WITH DECREASED LINEAR THERMAL EXPANSION AND METHOD FOR MAKING THE SAME

Robert C. Anderson, Crossville; Jack M. Jones, and Thomas G. Kollie, both of Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 24, 1982, Ser. No. 381,277

Int. Cl.³ C22F *1/18*; C22C *43/00*

U.S. Cl. 148—11.5 F **6 Claims**

1. An extruded article of uranium-2.4 wt.% niobium characterized by a yield strength at 0.2% offset of at least 400 MPa, an ultimate tensile strength of at least 1050 MPa, a compressive yield strength at 0.2% offset of at least 675 MPa, an elongation in 25 mm of at least 25% and a linear thermal expansion of less than 0.98% in a direction transverse to the extrusion over a temperature range of 22° C. to 600° C.

3. A method for extrusion-forming a uranium alloy article of uranium-2.4 wt.% niobium that is characterized by a linear thermal expansion of less than 0.98% in a direction transverse to the direction of extrusion over a temperature range of 22° C. to 600° C., a tensile yield strength at 0.2% offset of at least 400 MPa, a tensile strength of at least 1050 MPa, a compressive yield strength at 0.2% offset of at least 675 MPa, and an elongation of at least 25% in 25.4 mm comprising the steps of:

heating a billet of the uranium-niobium alloy to a temperature adequate to effect the extrusion of the billet at a temperature between 647° C. and 663° C.;

extruding the heated billet into the article through an extrusion die with an area-based extrusion ratio of at least 8.4:1 with a ram speed no greater than 6.8 mm/sec.;

quenching the article to room temperature with water as it exits from the die, and

thereafter heating the quenched article to a temperature of at least about 580° C. for a duration sufficient to stabilize the alpha phase crystalline structure of the uranium in the article.

4,361,448

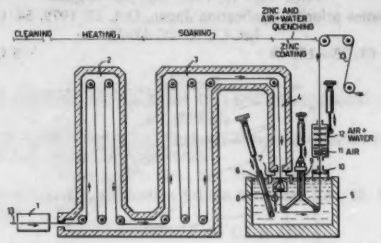
METHOD FOR PRODUCING DUAL-PHASE AND ZINC-ALUMINUM COATED STEELS FROM PLAIN LOW CARBON STEELS

Pertti J. Sippola, Parainen, Finland, assignor to Ra-Shipping Ltd. Oy, Espoo, Finland

Filed May 27, 1981, Ser. No. 267,659

Int. Cl.³ C21D *1/48*

U.S. Cl. 148—15 **7 Claims**



1. A method for producing coated high strength low alloy steel, comprising the consecutive continuous steps of

cleaning a strip of steel from rolling oil,

heating the strip in a furnace to the temperature range A_1 to A_3 in a protective atmosphere,

annealing the strip in a soaking furnace at a temperature in the range of A_1 to A_2,

quenching the strip in a zinc-aluminum molten metal bath for rapid cooling of the strip to a temperature in the range of 420° C. to 490° C. and for coating the steel with a zinc-aluminum alloy, and

rapidly cooling the steel strip to a temperature below 300° C. in order to obtain a dual-phase structure.

4,361,449

PROCESS FOR THE PREPARATION OF PRE-MELTED, BASIC WELDING POWDERS FOR SUBMERGED ARC WELDING

Anton More, Burghausen, Fed. Rep. of Germany, assignor to Wacker-Chemie GmbH, Munich and Messer Griesheim GmbH, Frankfurt am Main, both of, Fed. Rep. of Germany

Filed Sep. 8, 1981, Ser. No. 299,956

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1980, 3036438

Int. Cl.³ B23K *35/24*

U.S. Cl. 148—26 **3 Claims**

1. A process for the preparation of premelted, basic welding powders for submerged arc welding, having an analytical content of:

0.5–20% by weight of SiO_2;

15–35% by weight of Al_2O_3;

0.05–10% by weight of TiO_2;

up to 10% by weight of ZrO_2;

0.01–10% by weight of MnO;

0.1–3% by weight of iron oxide;

20–40% by weight of alkaline earth compounds;

15–35% by weight of fluorides;

0.3–3% by weight of alkaline oxides; and

impurities contained in the raw materials, comprising the steps of:

preparing a component containing substantially oxidic compounds, with up to 5% by weight of fluoridic compounds, and a component containing substantially fluoridic compounds, with up to 5% by weight of oxidic compounds;

melting said two components separately to produce separate melts;

cooling said melts to produce two separate solidified products;

separately grinding said two products; and

mixing said two ground products to obtain a welding powder having the aforesaid analytical content.

4,361,450

PLASTIC BONDED EXPLOSIVE COMPOSITIONS

William O. Munson, Brigham City, Utah, assignor to Thiokol Corporation, Newtown, Pa.

Filed Jun. 2, 1975, Ser. No. 584,535
Int. Cl.³ C06B 45/10
U.S. Cl. 149—19.91 **14 Claims**

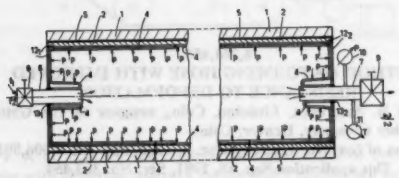
1. A plastic bonded explosive composition consisting essentially of a self-explosive which exhibits an exotherm as measured by differential thermal analysis at a temperature no lower than 275° C., said self-explosive being selected from the group consisting of 2,2',4,4',6,6'-hexanitrostilbene; 2,6-bis-(picrylamino)-3,5-dinitrobenzene; 2,4,6-amino-1,3,5-trinitrobenzene; and 3-picylamino-1,2,4-triazole, and a binder which is a polymer of an alkyl methacrylate wherein the alkyl group has 10 to 20 carbon atoms.

4,361,451

PROCESS FOR EVERTING A LINING INTO A CONDUIT UTILIZING TWO INJECTION FLUIDS

Alain P. Renaud, Montfermeil, France, assignor to Coopetanche S.A., Courtry, France

Filed Apr. 8, 1981, Ser. No. 252,088
Claims priority, application France, Apr. 18, 1980, 80 08679
Int. Cl.³ B29C 17/07
U.S. Cl. 156—64 **12 Claims**



1. A process for internally lining a conduit, comprising the following steps:

(a) cleaning of the inner wall of the conduit;

(b) forming an inner lining sleeve from a single flexible and fluidtight sheet whose surface intended to be the inner wall is smooth and whose surface intended to be the outer wall is fibrous, the length of said sheet being substantially equal to the conduit to be lined and the width of this sheet being at least equal to the periphery of the inner section of said conduit;

said sleeve having a cross-section capable of increasing when a pressure is applied to the inner wall thereof;

(c) coating the inner wall of said conduit with a first resin;

(d) introducing a light, flexible, fluidtight envelope, provided with at least one closable pipe at each of its ends, into said sleeve either before formation of this latter or after formation thereof, so that each of the ends of said envelope extends beyond the corresponding end of said sleeve; the cross section of said envelope being such that when it is inflated it may exert a pressure on the sleeve without undergoing plastic deformation so as to apply it against the conduit;

(e) coating the outer fibrous wall of said sleeve with a second resin;

(f) introducing the resin-coated sleeve and envelope disposed therein into said conduit

(g) placing a flexible cap, comprising a tubular portion and a bottom over each of the ends of the envelope to retain said envelope in said sleeve, the length of said tubular portion being substantially greater than the external diameter of the bottom of the cap;

said external diameter being smaller than the inner diameter of said sleeve so that, when said envelope is inflated, the tubular portion of said cap is firmly applied against said sleeve, said cap being held in position by the frictional force between the outer wall of said tubular portion thereof and the inner wall of said sleeve;

(h) introducing a first pressurized fluid into said envelope through a first pipe disposed at a first end of said envelope, while the pipe(s) disposed at the other end of the envelope is (are) closed;

continuing inflating said envelope until said sleeve is firmly applied against the inner wall of the conduit with a resin coat therebetween;

(i) introducing a second hot fluid under pressure into said envelope, before polymerization of the resin(s), through a first or through a second pipe disposed at said first end of said envelope, the pipe or pipes disposed at said second end of the envelope being maintained sufficiently open to allow the first fluid to escape at least partially;

continuing said introduction of said hot fluid until a sufficiently high temperature is reached in said envelope to cause complete polymerization of the resin(s) disposed between the outer wall of the sleeve and the inner wall of the conduit,

(j) deflating said envelope and withdrawing said envelope from the sleeve when said inner lining sleeve is firmly bonded to said inner wall;

(k) removing the water which has accumulated in the envelope during step (i).

4,361,452

METHOD OF ADHERING WALLCOVERING USING AQUEOUS ADHESIVE COMPOSITIONS

John B. Clarke, and Peter Flesher, both of Bradford, England, assignors to Allied Colloids Limited, Bradford, England

Continuation-in-part of Ser. No. 64,662, Aug. 8, 1979, abandoned. This application May 27, 1981, Ser. No. 267,484
Claims priority, application United Kingdom, Nov. 10, 1978, 44035/78; European Pat. Off., Aug. 6, 1979, 79301579.3; Canada, Aug. 8, 1979, 333388; United Kingdom, Aug. 16, 1979, 33487/78
Int. Cl.³ E04B 2/00
U.S. Cl. 156—71 **11 Claims**

1. In a method in which an aqueous adhesive composition and a wallcovering are applied to a surface and the wallcovering is thereby bonded to the surface, the improvement in which the aqueous adhesive composition consists essentially of, as its adhesive component, synthetic polymeric material present in an amount of from 1 to 10% consisting substantially only of water swollen, water insoluble particles of cross-linked synthetic polymer having a dry particle size of less than 10 microns and which remain as separate discrete particles, during use of said aqueous adhesive composition the polymeric material being such that a 3% dispersion of it in deionised water has a Brookfield viscosity at 20 rpm of at least about 10,000 cps.

4,361,453

METHODS OF PREPARING POLYIMIDES AND ARTIFACTS COMPOSED THEREOF

John Gagliani; Raymond Lee, and Anthony L. Wilcoxson, all of San Diego, Calif., assignors to International Harvester Company, Chicago, Ill.

Division of Ser. No. 186,629, Sep. 12, 1980, Pat. No. 4,305,796. This application May 11, 1981, Ser. No. 262,520
Int. Cl.³ B32B 5/18
U.S. Cl. 156—79 **11 Claims**

1. A method of preparing a reinforced polyimide foam comprising the steps of preparing a liquid resin containing substantially equimolar and essentially unreacted amounts of a 3,3',4,4'-benzophenonetetracarboxylic acid half ester, at least two primary diamines, and a solvent for said ester and said diamines; mixing a multi-partite reinforcement with said resin; evaporating the solvent from the mixture; and converting the

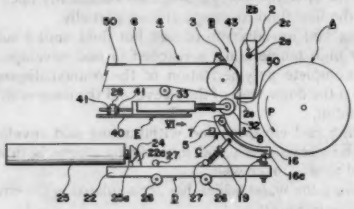
ester and diamine constituents of the mixture to a polyimide by subsequently exposing said mixture to microwave radiation for periods of sufficient duration to develop a polyimide chemical structure and a cellular physical structure.

4,361,454

PLY APPLYING APPARATUS AND METHOD FOR FORMING AN ELASTIC ANNULAR BODY

Kozo Nakahama, Kobe; Kazuo Kadomaru, Akashi, and Masuzo Okaniwa, Sakai, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed Mar. 25, 1981, Ser. No. 247,558
Claims priority, application Japan, Apr. 1, 1980, 55-43129
Int. Cl.³ B29H *17/20*; B65H *81/06*
U.S. Cl. 156—133 **9 Claims**



1. A ply applying method for forming an elastic annular body which comprises the steps of intermittently transporting said ply having a trailing end and a leading end towards a working station where the ply so transported is suspended from above with its trailing end resting on a transporting conveyor and its leading end positioned in front of a rotatable former for forming an elastic annular body thereon; pressing a portion of said ply adjacent to said leading end to the peripheral surface of said former by means of a retaining roller; applying said leading end portion to the peripheral surface of said former by causing a pressing roller to approach said former with said leading end portion being held between the pressing roller and the former and then causing the pressing roller to move angularly a specified distance along said peripheral surface of said former while rotating about its own axis in contact with said former with the leading end portion of said ply being positioned between said pressing roller and said peripheral surface of said former and each ply retained between said former and the retaining roller, and rotating said former so as to wind up the remaining portion of said ply thereon.

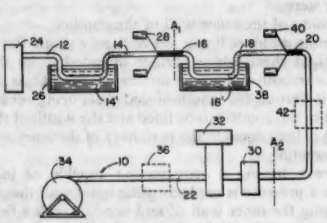
2. A ply applying apparatus for forming an elastic annular body which comprises a former supported for rotation in one direction for forming an elastic annular body on the peripheral surface thereof; a ply transporting means for intermittently transporting plies having a leading end and a trailing end to said former; an engaging means positioned on said peripheral surface of said former for causing said former to carry one of said plies which has been brought in direct contact with said former; a ply applicator means for applying said leading end portion of each ply, with respect to the direction of transportation of the plies, to the peripheral surface of said former wherein the ply applicator means comprises a ply pressing roller, for applying the leading end portion of each ply to the peripheral surface of said former, said pressing roller being of a double-construction including a motor-driven inner roller mounted about a shaft and an outer roller mounted coaxially on and externally of said inner roller for rotation independently of said inner roller, said inner roller having a sprocket wheel rigidly mounted on each end thereof and being rotatable independently of said outer roller and movable between upper and lower positions together with said outer roller; a pair of guide plates each provided with an arcuate slot of the same curvature as that of the peripheral surface of the former, said slots slidably receiving each end of said shaft; means for reciprocally moving said pair of guide plates between projected and retracted positions; a pair of chains fixedly supported by said respective guide plates and extending in parallel to said slots, said sprocket wheels being engaged in the respective chains such that, when said inner roller rotates, said inner roller moves along said slots with said sprocket wheel drivingly engaged in said chains, whereby, when said inner roller rotates and moves along said chains from the upper position towards the lower position after said guide plates have been moved to the projected position, the outer roller presses the leading end portion of each ply to the peripheral surface of the former and relatively rolls over the former with the leading end portion of each ply engaged to the peripheral surface of the former; and a ply retainer means for retaining each ply transported to a predetermined position relative to said former, at a portion adjacent said leading end thereof in cooperation with the peripheral surface of said former before the leading end portion of each ply is applied by the ply applicator means, said retainer means also operating to retain the remaining portion of each ply during the rotation of the former.

4,361,455

METHOD OF FORMING HOSE WITH IMPROVED RESISTANCE TO DEFORMATION

Robert B. Arterburn, Littleton, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Division of Ser. No. 126,253, Mar. 3, 1980, Pat. No. 4,306,591.
This application Sep. 18, 1981, Ser. No. 303,454
Int. Cl.³ B65H *81/00*
U.S. Cl. 156—149 **10 Claims**



1. A method for producing hose resistant to deformation comprising the steps of:

applying a film forming adhesive latex dispersion to a polymeric tube;

twining at least one reinforcement layer comprised of fiber bundles over the polymeric tube whereby the latex dispersion impregnates interstices in the fiber bundles; and

applying a polymeric cover over the reinforcement layer;

the temperature at which the latex dispersion is applied, or elevated to, exceeding its glass transition temperature, to thereby form a continuous polymeric film to bind the reinforcement to at least one of the tube or cover, and to bind fibers of the bundles together into an agglutinous stiffened mass;

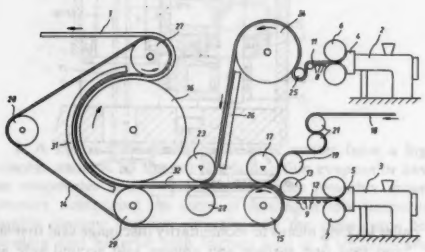
said continuous polymeric film serving to substantially stiffen the hose in comparison to the same hose without said polymeric film.

4,361,456

PROCESS AND APPARATUS FOR THE CONTINUOUS MANUFACTURE OF A CONVEYOR BELT

Reinhold Reschke, Hanover, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

PCT No. PCT/DE79/00109, § 371 Date Jun. 16, 1980, § 102(e) Date Jun. 16, 1980, PCT Pub. No. WO80/00815, PCT Pub. Date May 1, 1980
PCT Filed Sep. 11, 1979, Ser. No. 262,070
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1978, 2845476
Int. Cl.³ B32B *31/08*; B29H *7/00*
U.S. Cl. 156—179 9 Claims



1. A process for the continuous manufacture of conveyor belts with covering layers of rubber and a reinforcing insert of longitudinal wire ropes, comprising the steps of:

(a) tensioning and holding parallel said wire ropes;

(b) pressing in a first station said tensioned wire ropes into a lower cover layer;

(c) applying in a second station spaced from said first station an upper cover layer over said wire ropes, said upper cover layer, prior to said second station, passing through heating means to effect controlled scorching and thus surface hardening of said upper cover layer, and thereafter, in a continuous manner;

(d) passing said raw belt comprising said cover layers and said wire ropes through a compressing and vulcanizing zone to form the completed belt, with said upper cover layer being the radially inner layer when passing through said zone.

4. Apparatus for the continuous manufacture of conveyor belts having covering layers of rubber with a reinforcement insert of longitudinal wire ropes, comprising:

(a) means for extruding separately first and second cover layers;

(b) means for tensioning and holding parallel said wire ropes;

(c) a first station at which said tensioned wire ropes are pressed into said first cover layer;

(d) means for heating and effecting controlled scorching and thus hardening of said second layer;

(e) a second station spaced from said first station for applying said second cover layer to said wire ropes and said first cover layer to form a raw belt, and

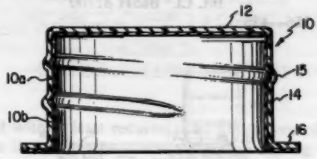
(f) vulcanizing means through which said raw belt passes for compressing and vulcanizing said belt, said scorched second layer being the radially inner layer when said belt passes through said vulcanizing means.

4,361,457

METHOD FOR MAKING A CONTAINER CLOSURE WITH LINER

Frederick D. Keeler, Trumbull, and Carleton Ellis, Jr., Southport, both of Conn., assignors to The KLM Company, Bridgeport, Conn.

Continuation of Ser. No. 514,194, Oct. 11, 1974, abandoned, which is a division of Ser. No. 361,636, May 18, 1973, Pat. No. 3,866,845. This application Jun. 9, 1976, Ser. No. 694,508
Int. Cl.³ B29C *5/08, 17/03, 25/00*
U.S. Cl. 156—224 2 Claims



1. The method of producing a closure for sealing the threaded neck of a container comprising the steps of

providing a base sheet of thermoformed plastic material of substantially uniform thickness;

providing a sheet of compressible thermoplastic rubber thermoformable liner material adjacent said base sheet, said sheet of liner material also being of substantially uniform thickness throughout and being more resilient than the plastic base material,

subjecting the liner material to ultraviolet light to reduce its coefficient of friction,

bonding the sheet of liner material to the sheet of base material, and

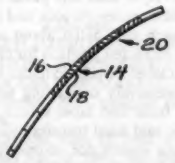
thermoforming said base sheet and said sheet of liner material as a unit to produce a closure having a top wall and a skirt wall with threaded fastening means thereon depending therefrom in which the plastic material of the base sheet is on the outside of the closure and in which the liner material is permanently bonded to the base sheet over the entire inside area of the closure.

4,361,458

PIANO SOUNDBOARD AND METHOD OF MAKING SAME

Stanley A. Grajek, DeKalb, Ill.; Robert S. Hill, Holly Springs, Miss., and George S. Klaiber, Tonawanda, N.Y., assignors to The Wurlitzer Company, DeKalb, Ill.

Filed Feb. 13, 1981, Ser. No. 234,360
Int. Cl.³ B27D *1/00*
U.S. Cl. 156—264 5 Claims



1. A method of building a soundboard for a piano, comprising: selecting a plurality of elongate boards, each having a predetermined curvature from side-to-side and bonding the elongate boards together edge-to-edge with the curvature of each board facing in the same direction to form a composite board having a substantially continuous curvature, concave on one side and convex on the other side, bonding a further ply of wood to each of said concave and convex sides of said compos-

ite core board, each of said additional plies of wood being of substantially equal thickness, but less than one-half the thickness of the composite core board, whereby the assembled, three-ply soundboard has a curvature imparted thereto by said composite core board.

4,361,459

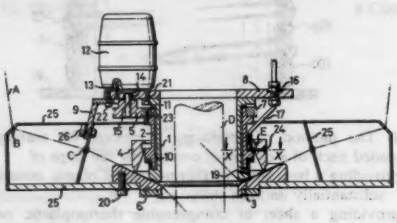
RESIN IMPREGNATOR FOR FILAMENT WOUND PIPE

Simon C. Martin, Bristol, England, assignor to Bristol Composite Materials Engineering Limited, Bristol, England

Filed Apr. 22, 1981, Ser. No. 256,392

Int. Cl.³ B65H *81/00*

U.S. Cl. 156—425 **5 Claims**



1. A filament-reinforced pipe manufacturing machine with means for impregnating filaments with resin comprising

(i) a mandrel capable of translation;

(ii) a fixed annular guide coaxial with the mandrel and axially positioned with respect to it so that the filaments are fed onto the mandrel as a converging cone of filaments;

(iii) an annular spinning disc also coaxial with the mandrel and positioned so that the periphery of the disc is adjacent to the guide;

(iv) means capable of feeding resin to the disc in a controllable amount, and

(v) means for spinning the disc to eject resin centrifugally onto the filaments moving over said guide.

4,361,460

LABELING DEVICE FOR BOTTLES AND THE LIKE

Hermann Kronseder, Regensburger Strasse 42, Worth/Donau, Fed. Rep. of Germany 8404

Filed Nov. 25, 1981, Ser. No. 325,065

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1980, 3044879

Int. Cl.³ B65C *9/16, 9/42*

U.S. Cl. 156—568 **12 Claims**

1. In a labeling machine comprising a turret rotatably mounted on a stationary turret support; a source of glue, a source of labels, and a label transfer cylinder, each positioned adjacent said turret; at least one pallet mounted to said turret for rotation about an eccentric axis; and drive means to periodically oscillate each said pallet about said eccentric axis between a radially retracted position for clearing said glue roller, label source, and label transfer cylinder and a radially extended position for successively contacting said source of glue, removing a label from said label source, and transferring said glue and label to said label transfer cylinder;

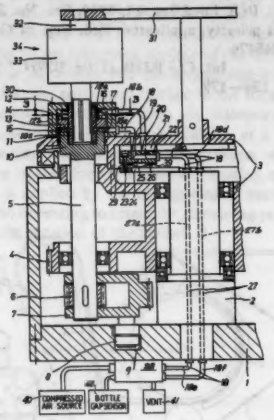
a double-acting clutch for momentarily disengaging said drive means from one said pallet and locking said pallet in said radially retracted position, comprising:

first and second coaxial shafts aligned on said eccentric axis, said first shaft having a first end keyed to said pallet, said second shaft having a first end driven by said drive means, and said shafts having adjacent second ends;

a first transversely disposed surface formed by a member fixed to the second end of said second shaft and coaxial therewith;

a second transversely disposed surface formed by a member fixed to said turret support and axially spaced from said first surface;

a transversely disposed floating clutch plate slidably splined on the second end of said first shaft for axial travel between said first and second surfaces, said clutch plate having a first side for engaging said first surface and a second side for engaging said second surface;



pallet locking means to momentarily disengage said first side and said first surface and engage said second side and second surface while said pallet is in said retracted position, for locking said pallet in said retracted position; and

pallet drive engaging means to engage said first side and said first surface and disengage said second side and said second surface for oscillating said pallet.

4,361,461

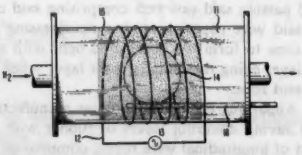
HYDROGEN ETCHING OF SEMICONDUCTORS AND OXIDES

Robert P. H. Chang, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 13, 1981, Ser. No. 243,622

Int. Cl.³ H01L *21/306;* B44C *1/22;* C03C *15/00, 25/06*

U.S. Cl. 156—643 **14 Claims**



1. A method of making a device including the step of etching a III–V material or at least one oxide comprising at least one III–V element from a device precursor,

characterized in that said etching is accomplished to a substantial degree by reacting atomic hydrogen with said material or oxide to form a volatile hydride at a temperature below the melting temperature of said material or oxide.

9. A method of making a device including the step of etching silicon patterned with a layer comprising silicon nitride characterized in that said etching is accomplished to a substantial degree by reacting atomic hydrogen with said silicon to form a volatile hydride at a temperature below the melting tempera-

ture of said silicon so that said silicon is etched at a faster rate than said layer comprising silicon nitride.

4,361,462
METHOD AND APPARATUS FOR REMOVING VOLATILE MATTER FROM HIGHLY VISCOUS MATERIAL

Yuji Fujii, and Chikao Oda, both of Kudamatsu, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

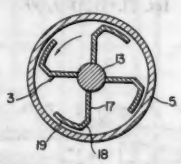
PCT No. PCT/JP80/00181, § 371 Date May 20, 1981, § 102(e) Date May 20, 1981, PCT Pub. No. WO81/00814, PCT Pub. Date Apr. 2, 1981

PCT Filed Aug. 12, 1980, Ser. No. 268,999

Claims priority, application Japan, Sep. 21, 1979, 54-120626

Int. Cl.³ B01D *1/22*

U.S. Cl. 159—6 W **5 Claims**



1. A method for removing volatile matter from a highly viscous material by the use of a falling-film evaporator having an evaporator body with agitator blades rotatably mounted therein, comprising the steps of feeding a low temperature highly viscous material directly into the evaporator body, heating said material with friction heat in a small clearance located between a face of respective heating blades connected to an outer end of each of the agitator blades of the evaporator and an inner wall of the evaporator body, and simultaneously with said heating, evaporating said volatile matter.

3. A falling-film evaporator for removing volatile matter from a highly viscous material, comprising an evaporator body having agitator blades rotatably mounted therein, and means for eliminating the requirement for a preheater including heating blade means, with heating blades connected to an outer end of each of the agitator blades in a manner providing a small clearance between a face of each heating blade and an inner wall of the evaporator body, positioned and dimensioned for frictionally heating said highly viscous material.

4,361,463
METHOD IN THE PRODUCTION OF DISSOLVING PULP

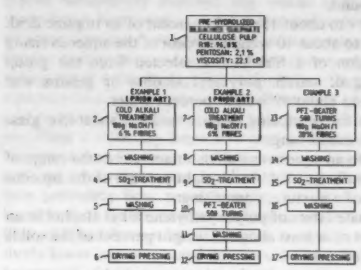
Erik A. S. Lindberg, and Karl-Johan Ljungqvist, both of Skoghall, Sweden, assignors to Billerud Uddeholm Aktiebolag, Säffle, Sweden

Continuation-in-part of Ser. No. 82,930, Oct. 9, 1979, abandoned. This application Feb. 6, 1981, Ser. No. 232,295

Int. Cl.³ D21C *9/00*

U.S. Cl. 162—9 **8 Claims**

1. In a process for producing a highly qualified dissolving pulp sheet comprising removing a substantial proportion of the hemicellulose in a pre-hydrolyzed, bleached sulphate cellulosic pulp consisting essentially of natural, non-chemically transformed cellulose and residual amounts of non-chemically transformed hemicellulose by contacting said pulp with an alkaline aqueous solution of sodium hydroxide to treat same, said solution containing 50–150 g NaOH/l, and being at a temperature of about 10° to 60° C., thereafter washing the treated pulp to remove sodium hydroxide and dissolved hemicellulose therefrom, and drying and pressing the washed, treated pulp to form sheets, the improvement comprising subjecting the pulp during at least a portion of the treatment step to mechanical working under a net energy supply of 15–100 KWh/ton pulp to split the primary layer, and at least the outer parts of the secondary layer, of the pulp fibers substantially without fibrillation, whereby the pulp sheet exhibits reduced swelling tendencies and improved mercerizing properties,



combined with at least reduced need for dialysis of the mercerisation liquor, in subsequent viscose processing, while reducing the energy consumption in the treatment process.

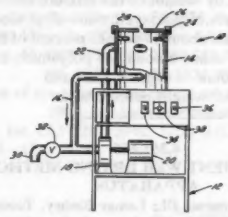
4,361,464
RAPID METHOD FOR LIBERATING THE LATENT PROPERTIES OF MECHANICAL PULPS

Alkibiadis Karnis, Dollard Des Ormeaux, Canada, assignor to Domtar Inc., Montreal, Canada

Continuation-in-part of Ser. No. 733,297, Oct. 18, 1976, abandoned. This application Oct. 5, 1979, Ser. No. 82,302

Int. Cl.³ D21B *1/00*

U.S. Cl. 162—49 **2 Claims**



1. A method for releasing latent properties of mechanical pulp comprising providing a sample of mechanical pulp at a pumpable consistency and a temperature of 80° C., to 95° C. in a container, recirculating all of said sample from and to said container by means of a centrifugal pump, said pump recirculating all of said sample at a rate of at least five times a minute for a period no longer than three minutes so as to release all the latent properties of said mechanical pulp.

4,361,465
GLASS FIBERS WITH IMPROVED DISPERSIBILITY IN AQUEOUS SOLUTIONS AND SIZING COMPOSITION AND PROCESS FOR MAKING SAME

Roy R. Graham, Lexington, N.C., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 131,580, Mar. 19, 1980, Pat. No. 4,330,337. This application Aug. 3, 1981, Ser. No. 289,670

Int. Cl.³ D21H *5/18*

U.S. Cl. 162—156 **12 Claims**

1. Sized glass fiber strand treated with an aqueous sizing composition to produce glass fiber strands with improved dispersibility in aqueous solution, where the sizing composition, comprises:

(a) 0.1 to 1.5 percent of the aqueous composition of an amounts of a mixture comprising:

i. at least about 45 weight percent of the mixture of phosphate esters of polyoxyethylene alkyl alcohol,

ii. about 10 to about 45 weight percent of a polyamine compound,

iii. about 1 to about 15 weight percent of an organic acid,

(b) about 1 to about 10 weight percent of the aqueous sizing composition of a film-former selected from the group consisting of starch, polyvinyl alcohol or gelatin, and about 89 to about 99 weight percent water.

10. Process for producing a more uniform sheet-like glass fiber product, comprising:

(a) adding to an aqueous solution an amount in the range of about 5×10^{-4} to 1×10^{-2} weight percent of the aqueous solution of a mixture, comprising:

i. phosphate esters of polyoxyethylene alkyl alcohol in an amount of at least about 45 weight percent of the solids of the mixture,

ii. a minor amount of polyamine compound,

iii. a small amount of organic acid,

(b) dispersing the mixture in the aqueous solution,

(c) adding to the aqueous solution containing the mixture an amount of glass fibers in the range of about 0.1 to about 2 weight percent of the aqueous dispersion,

(d) mixing the aqueous solution containing the mixture and glass fibers,

(e) conveying the aqueous dispersion of glass fibers to a separator having a foraminous element to separate the glass fibers in the form of a sheet from the aqueous dispersion,

(f) recycling the aqueous dispersion for admixture with additional glass fibers.

12. Treated glass fiber comprising wet chopped glass fibers attenuated from molten stream of glass from small orifices in a bushing, treated with an aqueous treating formulation comprising 0.1 to 1 percent by weight of the mixture of:

(a) phosphate esters of poloxyethylene alkyl alcohols in an amount of at least about 45 weight percent of the solids of the mixture, a minor amount of polyamine compounds, and a small amount of organic acid, and

(b) about 99 to 99.9 weight percent water.

4,361,466

AIR IMPINGEMENT WEB DRYING METHOD AND APPARATUS

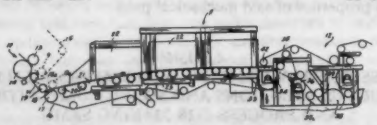
George H. Wong, Roscoe, Ill.; Lamar Embry, Tacoma, Wash.; Donald A. Ely, Roscoe, Ill.; Peter F. Pantaleo; Ronald D. Cooke, both of Beloit, Wis.; James L. Chance, Rockton, Ill., and Edward D. Beachler, Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.

Continuation of Ser. No. 47,766, Jun. 12, 1979, abandoned, and a continuation of Ser. No. 846,177, Oct. 27, 1977, abandoned.

This application Apr. 25, 1980, Ser. No. 143,837

Int. Cl.³ D21F *1/36, 5/02, 5/14*

U.S. Cl. 162—207 **11 Claims**



1. The method of dewatering a web in a paper making machine, which comprises:

pressing the web for removal of water therefrom;

thereafter immediately continuously supporting the web on the upper surface of a continuous belt supported on a long convex arcuate run defined by a series of horizontal rolls with the belt depending downwardly between the rolls while subjecting the web to a downward flow of heated air along said run with the belt being curved arcuately upwardly and the web thereby being maintained taut on the upper surface of the belt preventing flutter and wrinkling of the web; and

thereafter passing the web over a second thermal drying run over a plurality of heated dryer drums.

4,361,467

HEADBOX FOR A PAPERMAKING MACHINE

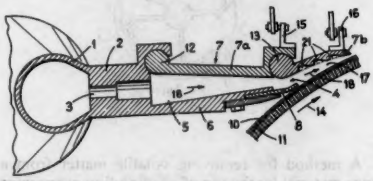
Alfred Bubik; Hans Dahl, both of Ravensburg, and Rüdiger Kurtz, Immenstaad, all of Fed. Rep. of Germany, assignors to Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Filed Nov. 16, 1981, Ser. No. 322,020

Claims priority, application Switzerland, Dec. 19, 1980, 9392/80

Int. Cl.³ D21F *1/00*

U.S. Cl. 162—336 **10 Claims**



1. A headbox for a papermaking machine, comprising:

means defining an infeed channel for a stock suspension;

a nozzle channel bounded by two rigid lip members;

said nozzle channel merging with said infeed channel for the stock suspension in the direction of flow of the stock suspension;

means defining a substantially band-shaped dewatering surface;

a rotating water pervious cylinder over which there is guided said dewatering surface;

said nozzle channel being oriented towards said dewatering surface;

said two lip members defining a first lip and a second lip;

said first lip having an end extending in close proximity to the dewatering surface;

said second lip having a rigid lip portion protruding past the end of the first lip in the direction of flow of the stock suspension;

said rigid lip portion being provided with a guide surface which is concave with respect to the stock suspension;

said guide surface overlying a portion of the dewatering surface which neighbors in the flow downstream direction the end of the first lip and bounding with said portion of the dewatering surface a sheet forming area converging in the direction of movement of the dewatering surface;

said lip portion being provided at least at the flow downstream half of the part of its guide surface overlying the dewatering surface with at least one substantially step-like recess;

said substantially step-like recess extending essentially transversely with respect to the direction of flow of the stock suspension;

said step-like recess being formed by at least one base surface and at least one flank;

said base surface being offset with respect to the guide surface and extending in a manner essentially corresponding to the direction of flow of the stock suspension;

said flank being positioned transversely with respect to the direction of flow of the stock suspension; and

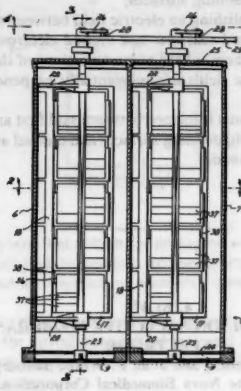
said flank being positioned at least approximately perpendicular to the guide surface.

4,361,468

FLUE HOUSING FOR A COKE OVEN

Alfred Mertens, and Franz Schäfer, both of Essen, Fed. Rep. of Germany, assignors to Didier Engineering GmbH, Fed. Rep. of Germany

Filed Aug. 15, 1980, Ser. No. 177,992
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1979, 2934532
Int. Cl.³ C10B 21/10, 21/14, 21/16
U.S. Cl. 202—239 5 Claims



1. Regulating apparatus for the flue housing of a coke oven comprising

a shaft,

a pair of frames mounted on said shaft operative to selectively seal said flue housing when disposed thereacross,

rim seals on the periphery of said frames, said seals being located on arcs of a circle whose center lies on the axis of said shaft, and

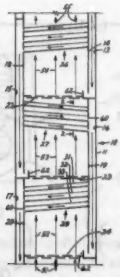
means for rotating said shaft to selectively move said frames across said flue housing thereby regulating the opening and closing of said flue housing.

4,361,469

PROCESS FOR USING COCURRENT CONTACTING DISTILLATION COLUMNS

William R. Trutna, 2213 Fenwood, Pasadena, Tex. 77502

Filed Feb. 17, 1981, Ser. No. 234,794
Int. Cl.³ B01D 3/14, 3/24
U.S. Cl. 203—99 15 Claims



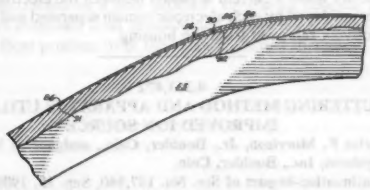
1. In a process for fractionating, entrainment removal, absorption, stripping, or the like, the improvement comprising, providing a tray type tower apparatus enabling reduction of tray spacing and reduction of horizontal apparatus area and thereby reducing apparatus cost, while enabling very high vapor velocity upward through the apparatus and resulting in high operating efficiency, comprising vertically disposed column means including surrounding wall means, plural vertically spaced horizontally disposed tray means occupying a relatively larger horizontal area portion of said column, vertically disposed tubular downcomer means occupying a relatively smaller horizontal area portion of said column, and a vapor-liquid separator means occupying said relatively larger horizontal area portion of said column spaced above each said tray means, said relatively larger horizontal area portion of said column providing a relatively large flow passage for upward flow of vapor and liquid between said tray means and separator means, and said relatively smaller horizontal area portion of said column providing flow passage means for downward flow of liquid to feed the uppermost of said tray means and downward flow of liquid from relatively higher separator means to relatively lower tray means and downward flow of liquid from the lowermost of said separator means, liquid being separated from a gas-liquid mixture by each separator means and the separated liquid being delivered into a said downcomer means by each said separator means, said vapor liquid separator means producing downflow liquid of relatively high density and substantially removing liquid from upflowing vapor whereby vertical tray spacing may be reduced resulting in reduction of apparatus height, and said tray means having relatively high upward vapor flow capacity whereby horizontal apparatus area may be reduced; operating said apparatus at tray efficiencies of up to about 92%.

4,361,470

CONNECTOR CONTACT POINT

Charles D. Eidschun, Seminole, Fla., assignor to Micro-Plate, Inc., Clearwater, Fla.

Continuation of Ser. No. 764,070, Jan. 31, 1977, abandoned, Continuation-in-part of Ser. No. 502,536, Sep. 3, 1974, and Ser. No. 580,304, May 23, 1975, Pat. No. 4,036,705, and Ser. No. 666,618, Mar. 15, 1976, Pat. No. 4,064,019. This application Jul. 24, 1980, Ser. No. 171,906
The portion of the term of this patent subsequent to Oct. 10, 1995, has been disclaimed.
Int. Cl.³ C25D 5/02, 5/06, 5/12, 5/16
U.S. Cl. 204—15 15 Claims



1. A connector with a contact point for yieldably engaging a further contact in electrical communication comprising:

a yieldable-metal underbody having an essentially uniform rectangular cross-section throughout a region and being longitudinally curvilinear in said region, and

a conductive metal overlay plated onto the external surface of said region, said overlay

(a) being located wholly or primarily on one of the external faces of said region,

(b) terminating with a feather edge along the entire boundary of the overlay, such feather edge being distinct from the essentially abrupt edge resulting from fluid plating with masking or partial immersion of the plated object, and further being distinct from a plated area remote from the intended overlay location resulting from target plating with a shaped anode,

(c) being approximately uniformly thick away from the feathered edges, thus exhibiting an absence of edge

build-up and/or varying thickness characteristic of fluid plating regardless of anode shape, and

(d) having a density characteristic of wiping electrodeposition.

4,361,471

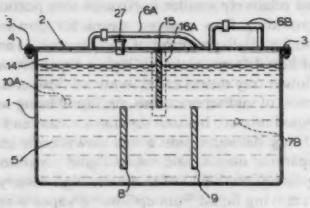
ELECTROLYTIC SWIMMING POOL CHLORINATION

Louis J. Kosarek, 321 Arboles Dr., El Paso, Tex. 79932

Filed Jun. 23, 1980, Ser. No. 162,132

Int. Cl.³ C25B *1/26*; C02F *1/46*; C25B *11/02, 15/08*

U.S. Cl. 204—128 **21 Claims**



1. An open-cell electrolytic chlorine gas generator comprising:

a housing forming a sealed container adapted to contain an electrolyte within said housing which comprises:

a chloride-containing solution, and

a buffer for the solution;

a pair of substantially planar electrodes attached to the housing and projecting into the electrolyte, said pair of electrodes are attached to and project inwardly from a side of said housing, with the surfaces of said electrodes having the largest surface area disposed in vertical planes;

a gas separating plate forming a sealed relationship to a lid of said housing and projecting downwardly into the electrolyte in a vertical plane located between and substantially parallel to the vertical planes of said pair of electrodes, to a depth directly above the electrodes;

a means for the addition of chemicals into said housing; and

a means for conducting the gases produced within said housing, from the sealed container,

whereby when a current is passed between the electrodes, the gases produced by each electrode remain separated and may be selectively removed from the housing.

4,361,472

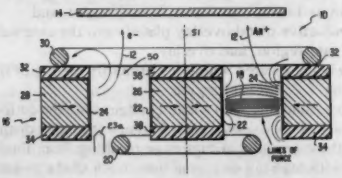
SPUTTERING METHOD AND APPARATUS UTILIZING IMPROVED ION SOURCE

Charles F. Morrison, Jr., Boulder, Colo., assignor to Vac-Tec Systems, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 187,140, Sep. 15, 1980. This application May 18, 1981, Ser. No. 264,551

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 R **25 Claims**



1. Sputtering apparatus comprising

at least one element to be sputtered;

at least one plasma source for generating a plasma from at least one ionizable gas where at least some of the charged particles of the plasma sputter the element, said plasma source including

first and second electrostatic field defining surfaces at approximately the same potential;

means for generating a magnetic field having lines of force which pass through said first and second electrostatic field defining surfaces;

a generator anode disposed adjacent that portion of the magnetic field between said first and second electrostatic field defining surfaces;

means for establishing an electric field between the generator anode and said first and second electrostatic field defining surfaces where at least portions of the electric and magnetic fields are substantially perpendicular to one another

whereby said plasma is formed between said first and second electrostatic field defining surfaces and ejected away from the generator anode.

4,361,473

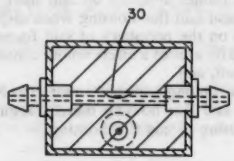
POTASSIUM ION-SELECTIVE MEMBRANE ELECTRODE

Chung C. Young, Natick, and John P. Willis, Sudbury, both of Mass., assignors to Nova Biomedical Corporation, Newton, Mass.

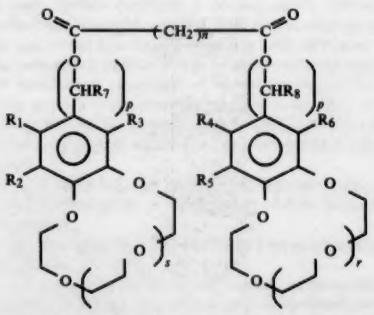
Filed Oct. 28, 1981, Ser. No. 315,919

Int. Cl.³ G01N *27/30*

U.S. Cl. 204—195 M **14 Claims**



1. In an electrode for determining the potassium ion content of a liquid sample to be tested, said electrode comprising a membrane having incorporated therein an ion selective component, the improvement wherein said ion specific component comprises a compound of the formula:

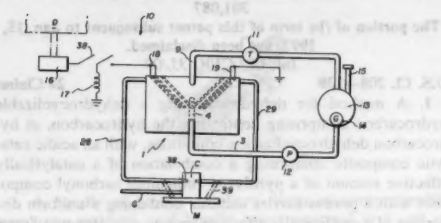


wherein each R_1, R_2, R_3, R_4, R_5, R_6, R_7, and R_8 is hydrogen or an alkyl group containing between one and about 20 carbon atoms, p is 0 or 1, n is one or more, and, each s and r, independently, is 1, 2, or 3, provided that, when p is 1, n is 8 or more.

4,361,474
ELECTROLYSIS CHAMBER FOR HYBRID FUEL SYSTEM

George Shoaf, 817 Wisteria Dr., Ephrata, Pa. 17522, and David Pearson, 25200 Carlos Bee Apt. 409, Hayward, Calif. 94542

Filed Jan. 12, 1981, Ser. No. 224,205
Int. Cl.³ C25B *15/08, 9/00, 11/03;* F02B *43/08*
U.S. Cl. 204—239 8 Claims



1. A hybrid fuel system for an engine which normally operates on fuel such as gasoline, kerosene, propane or the like and to be used in conjunction therewith comprising in combination:

an electrolysis chamber means including cooling means,

means for introducing a fluid into said electrolysis chamber means for disassociation of said fluid into its elemental components,

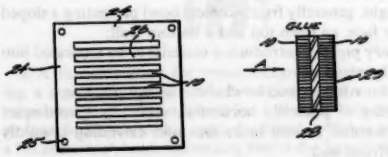
and control means for varying the ratio of the fuel to said elemental components,

wherein said electrolysis chamber means comprises: a fluid inlet and outlet, a pipe extending through said electrolysis chamber means at said inlet and to said outlet having plural apertures therethrough to allow migration of a first portion of said fluid into an electrolysis area of said electrolysis chamber means from said pipe, a second portion of said fluid is used as a heat transfer medium for said cooling means.

4,361,475
MEMBRANE BLOCK CONSTRUCTION AND ELECTROCHEMICAL CELL

Karl Moeglich, Dunedin, Fla., assignor to Innova, Inc., Clearwater, Fla.

Division of Ser. No. 110,997, Jan. 10, 1980, Pat. No. 4,326,935, which is a division of Ser. No. 957,876, Nov. 6, 1980, Pat. No. 4,242,193. This application Feb. 26, 1981, Ser. No. 238,663
Int. Cl.³ B01D *13/02;* C25B *7/00, 13/02;* C25C *7/04*
U.S. Cl. 204—252 17 Claims

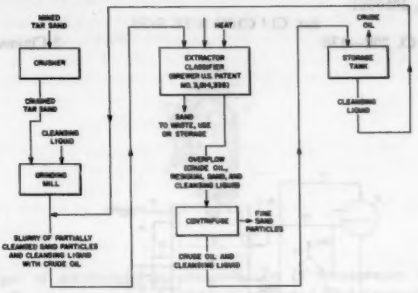


3. An electrochemical cell comprising: a self-supporting thick block consisting essentially of membrane material; means defining an electrode chamber in said block of membrane material extending the length of the height thereof; and an electrode and electrolyte disposed in said chamber, and distinct from said block; said membrane block comprising a plurality of layers of material containing each other and forming the membrane with said chamber extending through said layers, perpendicular thereto.

4,361,476
PROCESS AND APPARATUS FOR RECOVERY OF OIL FROM TAR SANDS

John C. Brewer, Salt Lake County, Utah, assignor to Garb-Oil Corporation of America, Salt Lake City, Utah

Filed Feb. 23, 1981, Ser. No. 237,442
Int. Cl.³ C10G *1/04*
U.S. Cl. 208—11 LE 4 Claims



1. A process for recovering oil from tar sands, comprising the steps of crushing a natural tar sand as mined; fine grinding the crushed tar sand in a ball or rod mill in the presence of a cleansing liquid, for producing a crude oil, cleansing liquid, and sand slurry; passing said slurry into an extractor classifier means which comprises a hydropulper type of extractor having a rotary cylindrical shell agitator, and a sink-float type of classifier having a sink-float tank means joined with said shell for sharing therewith, at substantially a common level, a body of cleansing liquid, said tank having liquid-overflow discharge means at substantially said level and means for elevating solids from the tank bottom to discharge adjacent to said level; agitating said slurry and the contained portion of said body of cleansing liquid in the agitator portion of the extractor classifier while passing the slurry into the sink-float tank means of the classifier portion thereof; overflowing crude oil and cleansing liquid from said tank as a float product; discharging sand from said tank means as a sink product; separating residual sand particles from said float product; and separating the crude oil in said float product from the cleansing liquid therein.

4,361,477
STABILIZING AND DEWAXING LUBE OILS

Stephen J. Miller, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 17, 1981, Ser. No. 255,015
Int. Cl.³ C10G *11/05, 55/06*
U.S. Cl. 208—67 7 Claims

1. A lubricating oil dewaxing and stabilizing process, comprising:

(a) catalytically dewaxing a hydrocracked hydrocarbonaceous feedstock by contacting said feedstock with a catalyst which comprises an intermediate pore size zeolite, said zeolite having a silica-to-alumina mole ratio of greater than about 200:1 and being in the hydrogen form, to produce a dewaxed effluent which contains olefins; and

(b) stabilizing at least part of said dewaxed effluent by contacting said part with a heterogeneous acidic catalyst which is substantially free of hydrogenation activity.

4,361,478

METHOD OF PREHEATING HYDROCARBONS FOR THERMAL CRACKING

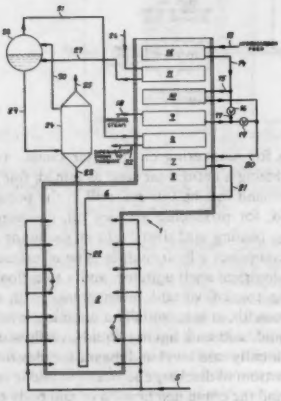
Hans Gengler, Munich; Wolfgang Schwab, Wolfratshausen, both of Fed. Rep. of Germany; Fraser Wall, Warrington, and Thomas Bailey, Yeadon, both of Pa., assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany and Selas Corporation of America, Dresher, Pa.

Filed Dec. 13, 1979, Ser. No. 103,294

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1978, 2854061

Int. Cl.[3] C10G *9/14, 9/36*

U.S. Cl. 208—130 3 Claims



1. In a method of operating a cracking furnace suitable for the cracking of different hydrocarbon feedstocks in the presence of steam to produce ethylene, said cracking furnace having a radiant heating zone provided with fuel-fired burners and through which a preheated mixture of said hydrocarbon feedstock and said steam is passed, combustion gases from said radiant heating zone passing into a convection zone being provided with heat exchanger means for preheating said feedstock and said steam, the improvement which comprises selecting different operation states for the cracking furnace by the steps of:

subdividing the heat exchanger means in said convection zone into a plurality of functionally separated heat exchanger bundles;

passing said hydrocarbon feedstock selectively through a first bundle or a first series of bundles of the heat exchanger means;

passing said steam separately from said hydrocarbon feedstock selectively through a second bundle or a second series of bundles of the heat exchanger means;

mixing said preheated hydrocarbon feedstock and said preheated steam before conducting the mixture into said radiant zone of said cracking furnace; and

selectively choosing the bundles for preheating of said hydrocarbon feedstock and said steam in accordance with the composition of said hydrocarbon feedstock.

4,361,479

HYDROCARBON DEHYDROCYCLIZATION WITH AN ACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 246,828, Mar. 23, 1981, which is a division of Ser. No. 82,436, Oct. 5, 1979, Pat. No. 4,268,377, which is a continuation-in-part of Ser. No. 848,699, Nov. 4, 1977, Pat. No. 4,183,804. This application Sep. 11, 1981, Ser. No. 301,087

The portion of the term of this patent subsequent to Jan. 15, 1997, has been disclaimed.

Int. Cl.[3] C10G *35/09*

U.S. Cl. 208—139 24 Claims

1. A method for dehydrocyclizing a dehydrocyclizable hydrocarbon comprising contacting the hydrocarbon, at hydrocarbon dehydrocyclization conditions, with an acidic catalytic composite comprising a combination of a catalytically effective amount of a pyrolyzed ruthenium carbonyl component with a porous carrier material containing a uniform dispersion of a catalytically effective amount of a platinum group component maintained in the elemental metallic state during the incorporation and pyrolysis of the ruthenium carbonyl component, a rhenium component and a halogen component.

4,361,480

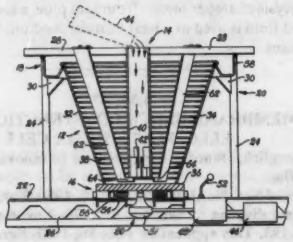
SEPARATOR UNIT FOR GOLD MINING ASSEMBLY

Henry F. Corbus, and Richard F. Corbus, both of 220 Oak, North Miami, Okla. 74358

Filed Jul. 29, 1981, Ser. No. 288,149

Int. Cl.[3] B03B *5/58;* B04B *1/10*

U.S. Cl. 209—453 1 Claim



1. A separator unit comprising:

an upright, generally frusto-conical bowl presenting a sloped inner face, an open top and a bottom wall;

a delivery pipe for introducing material to be separated into said bowl;

means for rotating said bowl about an upright axis;

a plurality of generally horizontal, vertically spaced-apart ribs secured to said inner face and extending inwardly therefrom; and

a plurality of stationary, elongated, L-shaped baffles, each having a major leg and a minor leg, the major leg of each baffle extending from the open top of the bowl to a point adjacent said bottom wall and being substantially parallel with said sloped inner face of the bowl, the minor leg of each baffle extending laterally from the major leg and being spaced slightly above said bottom wall, in substantially parallel relationship thereto and defining a projecting foot which is obliquely oriented with respect to said delivery pipe, said feet being oriented in the same general direction as the rotation of the bowl.

4,361,481

CAPILLARY FIBER BUNDLES

William J. Schnell, Wheeling, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Division of Ser. No. 41,112, May 21, 1979, Pat. No. 4,276,687.
This application Feb. 2, 1981, Ser. No. 230,467
Int. Cl.[3] B01D *31/00*
U.S. Cl. 210—85 3 Claims

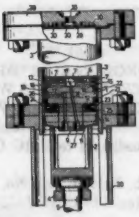
1. A bundle of tubular capillary fibers of semipermeable membrane material, said bundle being wrapped in a coil of flexible sheet, said sheet defining an inner coiled end portion positioned adjacent said bundle, said inner coiled end portion being of substantially rectangular shape, an outer end portion, opposed to said inner end portion, defining an outer end and sides which taper transversely inwardly toward the outer end, and marker means on said paper sheet spaced from the middle of said sheet toward said outer end, the outer end of said wrapped sheet overlying said marker means, said bundle being of a predetermined compression by said coil of sheet, governed by the positioning of said marker means.

4,361,482

CHROMATOGRAPH FOR PRESSURE CHROMATOGRAPHY

Volker Teetz, Hofheim am Taunus; Rainer Uhmann, Kriftel, and Rudolf Knapp, Eppstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 7, 1981, Ser. No. 309,455
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1980, 3038132
Int. Cl.[3] B01D *15/08*
U.S. Cl. 210—198.2 2 Claims



1. A chromatograph for pressure chromatography, comprising a separation column which has, arranged so that it can move therein, a plunger which has a plunger stem and has, on its front face, a collecting space for liquid, which is covered by a frit and which has a connecting line to the face of the plunger opposite to the front face, wherein the plunger comprises a lower part having a device to accommodate the plunger stem, and an upper part, the two parts being arranged so that they can be moved in relation to one another, the upper part has a centering peg which projects into the lower part, a spring on which the upper part is supported, is located concentrically to the peg, the upper part has recesses on its circumference to accomodate at least two seals and a ring channel which is formed by a retaining ring for one seal and is connected to the collecting space, and the other seal is held in its recess by a ring which is located concentrically around the spring and is supported by the lower part.

4,361,483

DISPOSABLE PHARMACEUTICAL FILTER ASSEMBLY

David B. Pall, Roslyn Estates, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Filed Nov. 2, 1981, Ser. No. 317,665
Int. Cl.[3] B01D *25/02*
U.S. Cl. 210—445 19 Claims

1. A disposable unitary filter assembly free from internal seals for filtering pharmaceutical fluid materials without danger of microorganism contamination of downstream filter effluent in the event of leakage of unfiltered fluid material past a filter seal, comprising, in combination, a filter housing of plastic material comprising first and second housing parts; the first housing part having a first fluid chamber open at one side, a fluid port opening into the fluid chamber, and a peripheral sealing surface extending in at least two planes at an angle to each other of from 30° to 150°; the second housing part having a second fluid chamber open at one side, a fluid port opening into the fluid chamber and a peripheral sealing surface extending in at least two planes at an angle to each other of from 30° to 150°; a filter element disposed in the second fluid chamber in the second housing part and comprising a tubular filter confined between and sealed in a fluid-tight seal to end caps at each end thereof, of which a first end cap is closed, and a second end cap is of plastic material and has an opening therethrough communicating the interior of the tubular filter with the first fluid chamber, and a peripheral lip extending into sealing engagement with and between the peripheral sealing surface of each housing part in each plane thereof and permanently bonded thereto; the peripheral lip extending across and sealingly closing off the open sides of the first and second fluid chambers, so that fluid communication therebetween is restricted to the opening in the second end cap via the filter, and the leakage path at the end cap peripheral lip does not bypass the filter, but runs to the exterior of the housing between the lip and one housing part.

4,361,484

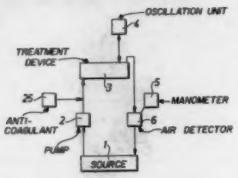
PROCESS FOR TREATING AND/OR REMOVAL OF SUBSTANCES FROM LIQUID, ESPECIALLY WHOLE BLOOD

Lars-Ake L. Larsson, Loddekopinge; Lars O. V. Naucler, and Ulf T. G. Nylen, both of Lund, all of Sweden, assignors to Gambro AB, Sweden

PCT No. PCT/SE79/00132, § 371 Date Feb. 11, 1981, § 102(e) Date Jan. 9, 1981, PCT Pub. No. WO80/02805, PCT Pub. Date Dec. 24, 1980
PCT Filed Jun. 11, 1979, Ser. No. 232,037
Int. Cl.[3] B01D *13/00, 31/00*
U.S. Cl. 210—632 34 Claims

1. A process for treating a liquid to remove a substance therefrom comprising the steps of providing a chamber including a microporous semi-permeable membrane filter, a first liquid containing said substance to be removed in direct contact with one side of said membrane filter, and a second fluid in direct contact with the other side of said membrane filter, wherein at least a portion of said first liquid containing said substance is capable of penetrating said membrane filter,

wherein a substance removal agent is immobilized with regard to said membrane such that the substance removal agent contacts said penetrating portion of said first liquid but does not directly contact said first liquid itself, and wherein said substance removal agent is selected from the group consisting of material capable of adsorbing said substance, material capable of reacting biologically with said substance to remove said substance, and mixtures of such materials; withdrawing a portion of said second fluid from said chamber to create a first predetermined pressure for said second fluid below that of the first liquid; and supplying said second fluid to said chamber to create a second predetermined pressure for said second fluid above that of the first liquid; wherein said withdrawing and supplying steps cause said penetrating portion of said first liquid to flow in an alternating path in the pores of said membrane filter to effect contacting of said penetrating portion containing said substance with said substance removal agent.



4,361,485

METHOD OF AND APPARATUS FOR WASHING AND CLEANING MEMBRANE FILTRATION UNITS

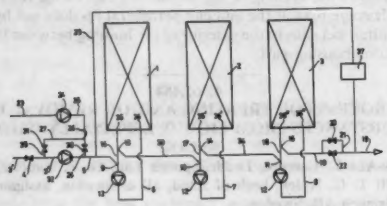
Sije Boonstra, Zwolle, Netherlands, assignor to Wafilin B.V., Zwolle, Netherlands

Filed Jul. 1, 1980, Ser. No. 165,042

Claims priority, application Netherlands, Jul. 3, 1979, 7905194

Int. Cl.³ B01D *31/00, 13/00*

U.S. Cl. 210—636 **15 Claims**



1. Method of washing and cleaning a plurality of membrane filtration units **(1,2,3)** aligned in series, each of said units **(1,2,3)** being part of a circuit **(6,7,8)** provided with a recirculation pump **(12)**, said circuits being valvelessly directly interconnected **(9,10,11)** in seriation whereby the respective unit of each of the circuits can be fed with liquid to be purified and impure liquid be discharged, which either serves as supply for a consecutive circuit or which is discharged, and by subsequently passing a washing liquid, through membrane filtration units aligned in series, at low pressure wherein a quantity of washing liquid is fed to the circuit inlet **(9,10,11)** which quantity exceeds the predetermined pumping capacity of the recirculation pump **(12)**.

4,361,486

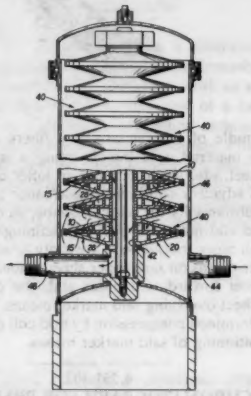
FILTER MEDIA, METHOD FOR OXIDIZING AND REMOVING SOLUBLE IRON, METHOD FOR REMOVING AND INACTIVATING MICROORGANISMS, AND PARTICULATE FILTER AID

Kenneth C. Hou, San Antonio, Tex., and Timothy J. Webster, Norfolk, Conn., assignors to AMF Incorporated, White Plains, N.Y.

Filed Apr. 28, 1981, Ser. No. 258,247

Int. Cl.³ C02F *1/50, 1/72*; B01D *39/18*

U.S. Cl. 210—722 **38 Claims**



1. A filter media for oxidizing and removing soluble iron contained in an aqueous fluid comprising an amount of particulate immobilized in a substantially inert porous matrix, at least a portion of the particulate having on its surface

magnesium peroxide (MgO_2),

the amount of peroxide on the particulate surface is sufficient to oxidize the soluble iron when the fluid is passed through the filter media, to form an insoluble iron which is captured by the media.

4,361,487

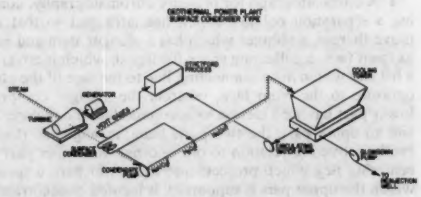
CONTROL OF HYDROGEN SULFIDE EMISSION FROM GEOTHERMAL STEAM PLANTS WITH HYDROGEN PEROXIDE AND SODIUM VANADATE

William A. Hills, Lawrenceville, and Richard A. Brown, Trenton, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Feb. 9, 1981, Ser. No. 232,603

Int. Cl.³ C02F *1/72*

U.S. Cl. 210—759 **10 Claims**



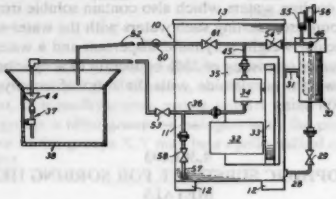
1. A process for removing hydrogen sulfide from the condensate of spent steam in a geothermal power plant which comprises oxidizing said hydrogen sulfide with a peroxygen compound in the presence of a vanadate catalyst under neutral to alkaline conditions.

4,361,488

LIQUID SEPARATING AND RECYCLING

Harold R. White, New Lenox, and Alexander J. Doncer, Jr., Palos Heights, both of Ill., assignors to Alar Engineering Corporation, Chicago, Ill.

Filed Dec. 10, 1980, Ser. No. 215,060
Int. Cl.³ B01D *17/02, 27/00*
U.S. Cl. 210—776 18 Claims



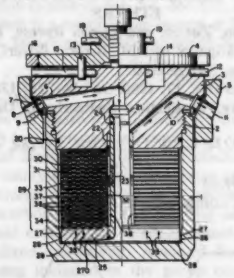
14. The method of removing dirt and tramp oil from aqueous detergent solutions from industrial equipment which comprises, collecting a pond of used dirt and oil laden detergent solution, pumping solution from the bottom of the pond, simultaneously sucking solution from just below the top of the pond, filtering solid contaminants from the pumped solution, flowing the filtered solution through a coalescer unit into a surrounding pond, flowing solution from the bottom of said surrounding pond into the bottom of a second pond in side by side relation with said surrounding pond, allowing coalesced oil to rise to the top of the surrounding pond, forming a column of said coalesced oil at the top of said surrounding pond, draining the oil from the top of said column of the surrounding pond, controlling the level of said ponds to maintain a column of oil in said surrounding pond above the top level of the second pond, and continuously recirculating solution from the top of the second pond back to the collecting pond.

4,361,489

DEVICE FOR FILTERING A LIQUID AND A SPINNING ASSEMBLY PROVIDED WITH SUCH A FILTER

Harley Kilsdonk, Zevenaar; Frits Linde, Arnhem, and Petrus L. Schippers, De Steeg, all of Netherlands, assignors to Akzona, Incorporated, Asheville, N.C.

Filed Jun. 17, 1980, Ser. No. 160,200
Claims priority, application Netherlands, Jun. 19, 1979, 7905055
Int. Cl.³ B01D *25/18*
U.S. Cl. 210—780 15 Claims



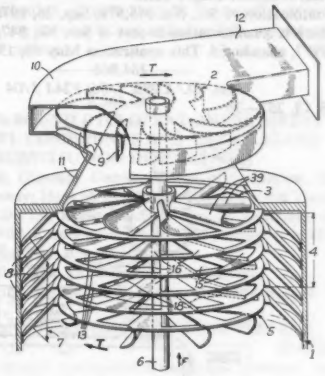
15. A method of filtering polymeric-containing liquids having a viscosity higher than 10 Pascal seconds in a filtering device having a housing provided with a liquid inlet and a liquid outlet and a filter pack positioned between said inlet and outlet, said filter pack being formed of a plurality of filtering disks and supporting disks arranged to allow for flow of liquid to be filtered through said pack and means for applying a compressive pressure to said pack which includes a piston displaceable to compress the filter pack as a result of a pressure drop of at least 25 kPa in the pressure of the fluid to be filtered, which comprises introducing the liquid to be filtered into said filtering device via said liquid inlet, applying liquid pressure to said piston to compress the plurality of filter disks and supporting disks and simultaneously introducing the liquid to be filtered into said filter pack disks via a liquid passage means that is formed between a zone upstream and a zone downstream of said piston,, said liquid passage means providing a pressure drop of at least 25 kPa and thereafter passing the liquid through said filter pack and to said liquid outlet.

4,361,490

PROCESS FOR CENTRIFUGAL SEPARATION AND APPARATUS FOR CARRYING IT OUT, APPLICABLE TO A MIXTURE OF PHASES OF ANY STATES

Pierre Saget, 36 avenue de la Grande Armee, 75017 Paris, France

Filed Oct. 23, 1980, Ser. No. 199,863
Claims priority, application France, Oct. 31, 1979, 79 27079
Int. Cl.³ B01D *21/26*
U.S. Cl. 210—787 22 Claims



1. A process for centrifugal separation of a heavy phase from a light phase in a mixture comprising steps of:

providing a housing having an outlet and a plurality of apertured plates rotating therewithin;

offsetting the apertures in adjacent plates to define an inclination therebetween so that at least one uninterrupted helical path through the plates is defined and extends for a substantial length of said housing;

feeding a fluid mixture which is to undergo separation to the housing;

defining a boundary between said helical path and a zone outside said helical path which defines the profile of the helical path;

said zone being located between portions of the helical path and between portions of said plates;

rotating the plates and imparting an absolute tangential velocity to fluid flowing in said helical path and an absolute tangential velocity to fluid located in said zone, the absolute tangential velocity of the fluid in said helical path exceeding the absolute tangential velocity of the fluid in the zone, said absolute tangential velocity creating a helical path centrifugal force in said helical path and a zone centrifugal force in said zone, any heavy phase crossing said boundary and entering said zone being prevented from moving toward said housing outlet and being sub-

jected to said zone centrifugal force to be moved radially outward of said plates to effect a zone centrifugal separation, and any heavy phase remaining in said helical path being subjected to said helical path centrifugal force which is higher than said zone centrifugal force to effect a helical path centrifugal separation, whereby a plurality of centrifugal separations are performed on said mixture;

fluidly connecting the zone with a heavy phase collecting means;

collecting the heavy phase in the heavy phase collecting means;

fluidly connecting the helical path with a discharge means; and

discharging the light phase fluid flowing in the helical path from the housing.

4,361,491

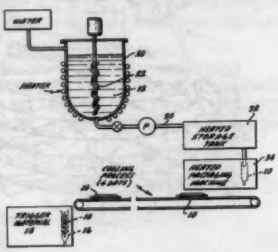
SUPERCOOLED FLUIDS AND METHODS OF PRODUCING SUCH SUPERCOOLED FLUIDS

Donald E. Truelock, Moberly, Mo., assignor to Kay Laboratories, Inc., San Diego, Calif.

Continuation of Ser. No. 945,871, Sep. 26, 1978, abandoned, which is a continuation-in-part of Ser. No. 847,141, Oct. 31, 1977, abandoned. This application May 18, 1981, Ser. No. 264,865

Int. Cl.³ C09K *5/06;* **F24J** *3/04*

U.S. Cl. 252—70 **12 Claims**



1. A method of producing sodium thiosulphate in only the pentahydrate phase, including the following steps:

heating the aqueous solution of sodium thiosulphate pentahydrate to a temperature of at least 165° F. for a sufficient period of time to melt all of the crystals in the sodium thiosulphate pentahydrate,

maintaining the solution alkaline, and

adding water to the solution to maintain the specific gravity of the solution at a particular value for inhibiting the self-triggering of the sodium thiosulphate into the crystalline state.

8. A method of producing sodium thiosulphate in only the pentahydrate phase, including the following steps:

adding to the sodium thiosulphate a chemical selected from the group consisting of glycerol and ethylene glycol for lowering the melting point to the solution and for limiting the size of the crystals in the solid state,

heating the mixture of the sodium thiosulphate pentahydrate and the chemical to a temperature of at least 165° F. for a sufficient period of time to melt all of the crystals of sodium thiosulphate pentahydrate in the solution,

adding water to the mixture to maintain the specific gravity of the mixture at a value of approximately 1.595, and

maintaining the solution alkaline.

4,361,492

PARTICULATE DISPERSANT ENHANCEMENT USING ACRYLAMIDE-ACRYLIC ACID COPOLYMERS

Leonard Dubin, Skokie, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Apr. 9, 1981, Ser. No. 252,695

Int. Cl.³ C02F *5/12*

U.S. Cl. 252—175 **2 Claims**

1. A method of enhancing the activity of water-soluble, low molecular weight polymeric dispersants used to suspend iron oxides in cooling waters which also contain soluble iron compounds comprises treating such waters with the water-soluble, low molecular weight polymeric dispersant and a water-soluble copolymer consisting of 25% by weight of acrylic acid and 75% by weight acrylamide with the ratio of copolymer to soluble iron being 1:1.

4,361,493

HYDROPHILIC SUBSTRATE FOR SORBING HEAVY METALS

John E. Kiefer, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,372

Int. Cl.³ C08J *5/18;* **C08L** *1/10, 3/04;* **C09K** *3/00*

U.S. Cl. 252—184 **14 Claims**

1. The method of making a hydrophilic substrate for sorbing by ion exchange heavy metals comprising:

incorporating in a hydrophilic polymeric substrate a metal chloride selected from the group consisting of zinc chloride, ferric chloride, ferrous chloride, cupric chloride and cuprous chloride; said hydrophilic polymeric substrate being formed from a water insoluble hydrophilic polymer selected from the group consisting of cellulose esters, cellulose ethers, starches cross-linked to render them water insoluble, regenerated cellulose, and natural polymers selected from the group consisting of wood pulp, cotton, hemp, jute, sisal, flax, kapok and coconut shell fibers; said metal chloride being incorporated in said hydrophilic polymeric substrate by treating said substrate with a solution containing about 20 to about 70% metal chloride; and

then treating said metal chloride incorporated substrate with a sulfide donor selected from the group consisting of hydrogen sulfide, or an aqueous solution of sodium sulfide, potassium sulfide, ammonia sulfide and thioacetamide to convert said metal chloride to a dispersion of a finely precipitated metal sulfide within said substrate; said finely precipitated metal sulfide comprising about 5 to about 50% by weight metal sulfide.

4,361,494

ANISOTROPIC CYCLOHEXYL CYCLOHEXYLMETHYL ETHERS

Maged A. Osman, Zurich, and Laszlo Revesz, Basel, both of Switzerland, assignors to BBC Brown, Boveri, & Company, Limited, Baden, Switzerland

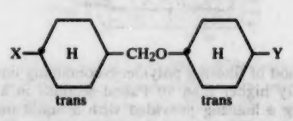
Filed Dec. 17, 1980, Ser. No. 217,138

Claims priority, application Switzerland, Dec. 17, 1979, 11139/79

Int. Cl.³ C09K *3/34;* **G02F** *1/13;* **C07C** *43/184, 43/21, 93/12, 121/46*

U.S. Cl. 252—299.63 **14 Claims**

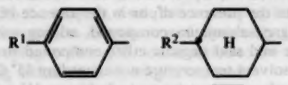
1. Anisotropic compounds of formula (1):



(1)

in which X and Y independently represent hydrogen, an alkyl

group with 1 to 12 C-atoms, an alkoxy group with 1 to 12 C-atoms, a monoalkylamino group with 1 to 12 C-atoms, a nitrile group, a nitro group, halogen, or a cyclic radical of formula (a) or (b):



(a) (b)

in which R^1 and R^2 independently represent hydrogen, an alkyl group with 1 to 12 C-atoms, an alkoxy group with 1 to 12 C-atoms, a monalkylamino group with 1 to 12 C-atoms, a nitrile group, a nitro group, or halogen, with the proviso that only one of the groups X,Y may be a cyclic radical of formula (a) or (b).

4,361,495

REGENERATION OF SUPPORTED-NICKEL CATALYSTS

Eugene V. Hort, Wayne, and Waldo De Thomas, Parsippany, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Mar. 13, 1981, Ser. No. 243,315

Int. Cl.³ B01J *23/94, 23/92;* **C07C** *29/00*

U.S. Cl. 252—411 R **7 Claims**

1. A method of regenerating the activity of a deactivated supported-nickel catalyst that has lost activity due to the formation of carbonaceous polymers on its catalytic surfaces while in use as a hydrogenation catalyst in the finishing stage of the process of conversion of butynediol to butanediol, said catalyst consisting essentially of, in percent by weight, about 5 to 50% nickel, and, optionally, about 1 to 15% of one or more promotor metals selected from the group consisting of copper, manganese and molybdenum, which comprises:

contacting said deactivated catalyst with hydrogen at a temperature of about 200° to 500° C. to convert said polymers to gaseous carbon compounds and removing said gaseous compounds from the vicinity of the thus-treated catalyst.

2. A method according to claim 1 wherein said temperature is about 275° to 375° C.

3. A method according to claim 1 wherein said deactivated catalyst is contacted in situ with a flow of hydrogen and said gaseous compounds are removed simultaneously in said flow.

4,361,496

PASSIVATION OF METAL CONTAMINANTS ON CRACKING CATALYST

Carmen Castillo, Lyons, and John C. Hayes, Palatine, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 166,525, Jul. 7, 1980, abandoned, which is a continuation-in-part of Ser. No. 132,602, Mar. 21, 1980, abandoned. This application Jan. 19, 1981, Ser. No. 226,269

Int. Cl.³ B01J *29/38, 21/20;* **C10G** *11/05, 11/04*

U.S. Cl. 252—416 **7 Claims**

1. A process for passivating a metal on fluidized cracking catalyst which has been contaminated with said metal due to the use of said catalyst in a fluidized cracking system, and wherein said catalyst is cycled between a cracking zone, in which said catalyst is contacted at an elevated temperature with a hydrocarbon feedstock containing said metal which deposits on said catalyst, and a regeneration zone, in which carbon is oxidized and thereby removed from said catalyst, said metal being included in the group comprising nickel, cobalt, or iron, which process comprises contacting said catalyst, prior to the cycling of said catalyst to said cracking zone, with a mixture of hydrogen gas and methane gas at a temperature of from about 900° F. to about 1400° F. and a pressure of from about atmospheric to about 50 psig. selected so as to effect reduction of substantially all of said metal to its metallic state and deactivation of said metal in its metallic state by selectively coating the sites of said nickel, cobalt or iron metal with a layer of carbon.

4. A process in accordance with claim 1 wherein said contacting of said catalyst with said gaseous mixture occurs in a passivation zone comprising a vessel in the dip leg line between the regeneration vessel and the reactor riser.

7. A process for passivating a metal on fluidized cracking catalyst which has been contaminated with said metal due to the use of said catalyst in a fluidized cracking system, and wherein said catalyst is cycled between a cracking zone, in which said catalyst is contacted at an elevated temperature with a hydrocarbon feedstock containing said metal which deposits on said catalyst, and a regeneration zone, in which carbon is oxidized and thereby removed from said catalyst, said metal being included in the group comprising nickel, cobalt, or iron, which process comprises contacting said catalyst, prior to the cycling of said catalyst to said cracking zone, with a gas comprising hydrogen to at least partially reduce a portion of said metal at a temperature of from about 900° F. to about 1400° F. and a pressure of from about atmospheric to about 50 psig prior to complete reduction of said metal, and then contacting said treated metal with methane gas at a temperature of from about 900° F. to about 1400° F. and a pressure of from about atmospheric to about 50 psig selected so as to effect reduction of substantially all of said metal to its metallic state and deactivation of said metal in its metallic state by selectively coating the sites of said nickel, cobalt, or iron metal with a layer of carbon.

4,361,497

POLYMER-BOUND CYCLOPENTADIENE METAL CARBONYL COMPOUNDS AND THEIR LIGAND SUBSTITUTION DERIVATIVES

Manfred Boldt; Giuseppe Gubitosa, both of Constance, Fed. Rep. of Germany; Hans H. Brintzinger, Hermann von Vicaristrasse 33a, D-7750 Konstanz, Fed. Rep. of Germany, and Ferdinand Wild, Kreuzlingen, Switzerland, assignors to Hans H. Brintzinger, Fed. Rep. of Germany

Filed Jun. 15, 1978, Ser. No. 915,750

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1977, 2727245

Int. Cl.³ B01J *31/20, 31/24;* **C07F** *15/00;* **C08F** *8/42*

U.S. Cl. 252—426 **28 Claims**

1. Polymer-bound cyclopentadiene metal carbonyl compounds and the ligand substitution derivatives thereof characterized in that said compounds and derivatives contain groups of the general formula

$$[-(C_5R_4)Me(CO)_xL_y]_z$$

in which

R is a hydrogen atom, a C_{1-4}-alkyl group, a benzene group or a diphenylmethyl group,

Me is a transitional metal from the 6th, 7th, or 8th transitional group of the periodic table,

x is 1, 2, or 3,

L is a tri(C_{1-3}-Alkyl) phosphine group, a triphenylphosphine group, a tri(C_{1-3}-alkyl)-phosphite group, a nitrosyl group, an allyl group, a $SnCl_3$ group, a halogen atom, or a hydrogen atom,

y is 0, 1 or 2, and

z is 1, 2, 3, or 4,

wherein said groups are covalently bound to a polymer carrier by way of methylene groups, Di(C_{1-3}-alkyl)-methylene groups, (C_{1-3}-alkyl)-phenyl methylene groups, diphenyl methylene groups, (C_{2-4}-alkylene) groups, Di(C_{1-3}-alkyl)-silyl groups, Di(C_{1-3}-alkoxy)-silyl groups, diphenyl silyl groups, (C_{1-3}-alkyl)-chlorine-silyl groups, phenyl chlorine silyl groups, dichlorine silyl groups, or by way of analogous silyl groups substituted with two or three groups of the general formula $-(C_5R_4)Me(CO)_xL_y$.

7. Compounds and derivatives of claim 1, prepared by a process which comprises:

(a) reacting

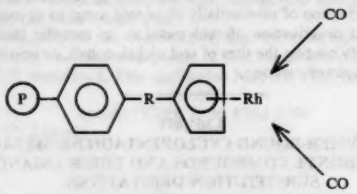
(i) a reactive metal carbonyl compound or ligand substitution derivative thereof, wherein said metal is from the 6th, 7th, or 8th transitional group of the periodic table; and

(ii) a protonated or deprotonated cyclopentadiene residue which is bound to a polymer carrier by way of methylene groups, Di(C_{1-3}-alkyl)-methylene groups, (C_{1-3}-alkyl)-phenyl-methylene groups, diphenyl methylene groups, (C_{1-3}-alkylene) groups, Di(C_{1-3}-alkyl)-silyl groups, Di(C_{1-3}-alkoxy)-silyl groups, diphenylsilyl groups, (C_{1-3}-alkyl)-chlorine-silyl groups, phenyl chlorine silyl groups, dichlorine silyl groups, or by way of analogous silyl groups substituted with two or three cyclopentadiene groups;

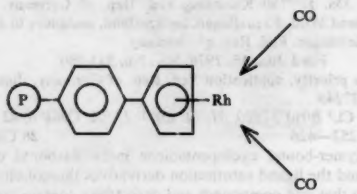
wherein the reaction occurs in a water-free solvent under an inert gas atmosphere at a temperature between −80° C. and the solvent boiling point for a period of from about 2 hours to several days; followed by

(b) isolating said compound or derivative from the reaction mixture.

20. A catalyst having a structure selected from the group consisting of



and



wherein R is an alkyl group containing 1 to 4 carbon atoms, and (P) represents a polystyrene polymer.

4,361,498

TITANIUM TRICHLORIDE CATALYTIC COMPONENT AND METHOD FOR HOMO- OR CO-POLYMERIZATION OF α-OLEFIN

Yoichi Sunada, Shinnanyo; Yoshikazu Takahashi, Hikari, and Masaru Takitani, Shinnanyo, all of Japan, assignors to Toyo Stauffer Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 1, 1980, Ser. No. 211,667

Claims priority, application Japan, Nov. 30, 1979, 54-155318

The portion of the term of this patent subsequent to Nov. 25, 1997, has been disclaimed.

Int. Cl.³ C08F *4/64*

U.S. Cl. 252—429 B **8 Claims**

1. A titanium trichloride catalytic component for polymerization of α-olefin, said catalytic component being obtained by separating it from a solution prepared by dissolving titanium tetrachloride, an organic ether compound having the formula ROR′ wherein R and R′ are the same or different alkyl groups, at least one of R and R′ being an alkyl group having not more than 5 carbons, said organic ether compound having at least 5 carbons and an organo-aluminum compound having the formula AlR_nX_{3-n} wherein R is an alkyl group having 1–10 carbons, X is halogen or hydrogen and n is an integer of $0<n\leqq3$, in a mixed solvent consisting of (a) a saturated aliphatic hydrocarbon and/or an alicyclic hydrocarbon; and (b) at least 3% by volume and not more than 20% by volume of a halogenated aromatic hydrocarbon, said mixed solvent being used either in the presence of; or in the absence of, an olefin, and said organo-aluminum compound, adding said titanium tetrachloride and said organic ether compound to the mixed solvent at a solvent temperature not exceeding 55° C. and then raising the solvent temperature to between 45° and 150° C. over a period of 10 minutes to 24 hours and, during this temperature raising process, said organic ether compound and/or titanium tetrachloride may be further added, the concentration of titanium tetrachloride in the mixed solvent being at least 0.5 mol per liter, whereby titanium trichloride catalytic component of average particle diameter measuring 10 to 500μ separates from said solution.

4,361,499

CATALYST FOR CONVERTING METHANOL AND SYNTHESIS GAS TO ETHANOL

Duane C. Hargis, Pleasant Ridge, and Michael Dubeck, Birmingham, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Filed Sep. 11, 1980, Ser. No. 186,217

Int. Cl.³ B01J *31/02*

U.S. Cl. 252—430 **5 Claims**

1. A catalyst composition for selectively converting methanol, carbon monoxide and hydrogen to ethanol, said catalyst comprising rhodium and iron in the reduced state deposited on a support of alumina impregnated with a promoter amount of a heterocyclic amine.

4,361,500

PROCESS FOR THE PREPARATION OF SUPPORTED METAL CATALYSTS

Tibor Mathe; Antal Tungler, and Jozsef Petro, all of, Budapest, Hungary, assignors to Magyar Tudomanyos Akademia Kosponti Hivatala, Budapest, Hungary

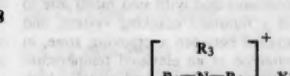
Continuation-in-part of Ser. No. 150,077, May 15, 1980, abandoned. This application May 18, 1981, Ser. No. 264,802

Claims priority, application Hungary, May 22, 1979, MA 3151

Int. Cl.³ B01J *31/28, 31/26, 37/02, 21/18*

U.S. Cl. 252—430 **10 Claims**

1. A process for the preparation of a supported metal catalyst containing at least one metal belonging to Group A and optionally at least one metal belonging to Group B, wherein Group A metals are selected from the group consisting of palladium, rhodium, ruthenium, platinum, iridium, osmium, silver, gold and cadmium and Group B metals are selected from the group consisting of zinc, mercury, germanium, tin, antimony and lead, by reductive deposition of the metal(s) onto the support with a solution containing the ions or compounds of the metal(s) in question and then reducing the support, characterized in that the metal(s) is (are) applied onto the support in the presence of at least one compound of the general formula (I),



(I)

wherein

R_1, R_2, R_3 and R_4 each stands for a straight-chained or branched C_{1-20} alkyl group, a C_{1-4} hydroxyalkyl group or a phenyl-(C_{1-4} alkyl) group optionally having additional substituents, preferably C_{1-4} alkyl groups, on the phenyl ring, and

X is hydroxy group or the residue of an organic or mineral acid,

that the reduction is effected by hydrogenation at a temperature not exceeding 300° C., and that no calcining step is used.

2. A process as claimed in claim 1, characterized in that a solution of at least one compound of the general formula (I) is admixed with the support, a solution containing the ions of the metal(s) belonging to Group A and optionally those of the metals belonging to Group B, too, is added to the mixture, and the resulting substance is hydrogen reduced.

4. A process as claimed in claim 1, characterized in that a solution of at least one compound of the general formula (I) is added to the solution containing the salt(s) of the metal(s) belonging to Group A and optionally those of the metal(s) belonging to Group B, the solution is admixed with the support, the support is separated from the suspension and reduced with hydrogen.

4,361,501

PREPARATION OF VANADIUM PHOSPHORUS CATALYSTS USING A MIXED PHOSPHORUS SOURCE

Patricia R. Blum, Macedonia; Ernest C. Milberger, Solon; Noel J. Bremer, Stow, and Dennis E. Dria, Shaker Hts, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 29, 1980, Ser. No. 220,629

Int. Cl.³ B01J *27/14*

U.S. Cl. 252—435 **15 Claims**

1. A process for the preparation of oxidation catalysts containing the mixed oxides of vanadium and phosphorus which comprises

(a) introducing a pentavalent vanadium-containing compound into a liquid medium, capable of reducing the valence state of said vanadium;

(b) effecting reduction of at least a portion of said vanadium to a valence state of about +4;

(c) adding a mixed phosphorus component comprising 45–90% by weight orthophosphoric acid and 10–50% by weight pyrophosphoric acid to said medium prior to or subsequent to effecting said reduction to form a catalyst precursor;

(d) recovering the catalyst precursor;

(e) drying the catalyst precursor;

(f) calcining the catalyst precursor.

4,361,502

CATALYST FOR THE PYROLYSIS OF HYDROCARBONS

Grigore Pop, Ploiesti; Gheorghe Ivanus, Bucharest; Silvia Boteanu, Pitesti; Pavel Tomi, and Ecaterina Pop, both of Ploiesti, all of Romania, assignors to Institutul de Inginerie Tehnologica Si Proiectari Pentru Industria Chimica - IITPIC, Bucharest, Romania

Division of Ser. No. 857,922, Dec. 6, 1977, Pat. No. 4,172,816. This application Mar. 30, 1979, Ser. No. 25,541

Claims priority, application Romania, Dec. 7, 1976, 88658

Int. Cl.³ B01J *29/20*

U.S. Cl. 252—455 Z **5 Claims**

1. A catalyst for the pyrolysis of hydrocarbons which essentially consists of a modified crystalline aluminosilicate of the mordenite zeolite type of the formula: $(yH.zM.uNa)O.Al_2O_3.nSiO_2$ where $y+z+u$ approximates or equals 2; n is a number greater than 20; and M is a metal selected from the group consisting of Cu, Ag or Co/2.

2. The catalyst according to claim 1 wherein said catalyst has from 0.005 to 0.50 wt.% of an oxide of a metal of large ionic radius deposited thereon wherein said metal or large ionic radius is selected from the group consisting of rare earth elements, lead and cerium.

4,361,503

CATALYST FOR CONVERTING SYNTHESIS GAS TO HIGH OCTANE PREDOMINANTLY OLEFINIC NAPHTHA

Francis G. Dwyer, West Chester, Pa., and William E. Garwood, Haddonfield, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 76,027, Sep. 17, 1979, abandoned, which is a continuation of Ser. No. 926,987, Jul. 21, 1979, Pat. No. 4,172,843. This application Dec. 29, 1980, Ser. No. 220,923

Int. Cl.³ B01J *29/28, 29/30*

U.S. Cl. 252—455 Z **8 Claims**

1. A catalyst composition comprising an iron-containing Fischer-Tropsch component and a volume excess of a solid containing a crystalline zeolite, wherein the crystalline zeolite comprises a zeolite having a composition in its anhydrous state in terms of mole ratios of oxides as follows:

(a) an $Al_2O_3:SiO_2$ ratio within the range of from 0 to less than 0.005 Al_2O_3 to more than 1 SiO_2 and

(b) an $(xR_2O+(1-x)\ M_{2/n}O):SiO_2$ ratio of less than 1.1:1

where M is a metal other than a metal of Group IIIA, n is the valence of said metal, R is tetraalkylammonium and x is a number greater than 0 but not exceeding 1, said zeolite having the x-ray diffraction lines set forth in Table 1 or Table 2 of the specification.

2. The catalyst of claim 1 wherein M is sodium or sodium in combination with tin, calcium, nickel or zinc.

4,361,504

PROCESS FOR MAKING A SILVER CATALYST USEFUL IN ETHYLENE OXIDE PRODUCTION

Jeffry A. Solomon, and Harold W. Young, Jr., both of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 4, 1981, Ser. No. 299,363

Int. Cl.³ B01J *21/04, 23/50*

U.S. Cl. 252—463 **8 Claims**

1. A process for making a supported silver catalyst which comprises:

a. impregnating an inert porous support material with an aqueous solution of a silver salt of an organic carboxylic acid containing ammonium hydroxide,

b. drying said impregnated support material at low temperature,

c. reducing said silver salt on said impregnated support material by reacting said salt with a polyhydroxy compound to form said catalyst,

d. removing residual reactants from said catalyst by washing with water, and

e. drying at low temperature prior to use.

4,361,505

PROCESS FOR TREATING RADIOACTIVE WASTE

Makoto Kikuchi; Koichi Chino; Fumio Kawamura, all of Hitachi, and Hideo Yusa, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 31, 1980, Ser. No. 117,089

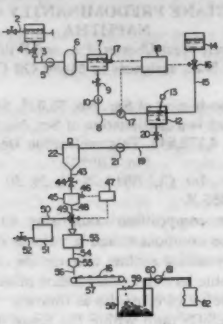
Claims priority, application Japan, Feb. 2, 1979, 54-10442

Int. Cl.³ G21F *9/16*

U.S. Cl. 252—628 **12 Claims**

1. A process for treating a radioactive waste, which comprises mixing a radioactive liquid waste produced from radioactive material handling facilities with at least 2% by weight of a binder based on solid matter in the radioactive waste, said binder comprising an organosilicon monomer containing at least two different reactive groups in one molecule and being

soluble or dispersible in the radioactive liquid waste, then drying the radioactive liquid waste containing said binder into



powder, and shaping the powder containing the binder into pellets.

4,361,506

COMPOSITIONS COMPRISING A POLY(METHYL ETHENYL BENZENE) RESIN AND MINERAL OIL

Robert V. Russo, Brooklyn, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 8, 1980, Ser. No. 119,681
Int. Cl.³ C08F *2/04*; C08K *5/01*
U.S. Cl. 524—577 **7 Claims**

1. A polymeric composition comprising a compatible mixture of a preformed polymer or a copolymer containing, in polymerized form, at least 50 weight percent of a monomer mixture comprising 0 to 0.1 percent by weight 1-methyl-2-ethenyl benzene, 0 to 15 percent by weight 1-methyl-3-ethenyl benzene and at least 85 percent by weight 1-methyl-4-ethenyl benzene; and 50–0 percent of a different ethylenically unsaturated monomer; and 1 to 10 percent by weight of the composition of mineral oil.

4,361,507

CABLE FILLER COMPOSITION CONTAINING (A) CRYSTALLINE POLYPROPYLENE HOMOPOLYMER, (B) STYRENE BLOCK COPOLYMER AND (C) MINERAL OIL

Larry G. Bourland, Murrysville, Pa., assignor to Arco Polymers, Inc., Philadelphia, Pa.

Filed Oct. 20, 1980, Ser. No. 198,404
Int. Cl.³ C08K *5/01*
U.S. Cl. 523—173 **4 Claims**

1. In a cable filling composition for use in water-proofing electrical cables wherein a thermoplastic polymer is admixed with a styrene-ethylene butylene-styrene block copolymer and mineral oil in an amount of 87–91 percent by weight of said composition, the improvement wherein said thermoplastic polymer comprises an isotactic, crystalline, polypropylene homopolymer having an average molecular weight of between 20,000 and 50,000.

4,361,508

CABLE FILLER COMPOSITIONS COMPRISING A MIXTURE OF (A) STYRENE BLOCK COPOLYMER, (B) CRYSTALLINE POLYPROPYLENE COPOLYMER AND (C) MINERAL OIL

Larry G. Bourland, Murrysville, Pa., assignor to Arco Polymers, Inc., Philadelphia, Pa.

Filed Oct. 20, 1980, Ser. No. 198,405
Int. Cl.³ C08K *5/01*
U.S. Cl. 523—173 **5 Claims**

1. In a cable filling composition for use in waterproofing electrical cables wherein a thermoplastic polymer is admixed with a styrene-ethylene butylene-styrene block copolymer and mineral oil in an amount of 87–91 percent by weight of said composition, the improvement wherein said thermoplastic polymer comprises an isotactic, crystalline polypropylene copolymer containing 0.1–4% by weight of an olefinic comonomer, said copolymer having an average molecular weight of between 20,000 and 40,000.

4,361,509

ULTRAPURIFICATION OF FACTOR VIII USING MONOCLONAL ANTIBODIES

Theodore S. Zimmerman, and Carol A. Fulcher, both of La Jolla, Calif., assignors to Scripps Clinic and Research Foundation, La Jolla, Calif.

Filed Dec. 14, 1981, Ser. No. 330,105
Int. Cl.³ C07G *7/00*
U.S. Cl. 260—112 B **16 Claims**

1. An improved method of preparing Factor VIII procoagulant activity protein comprising the steps of
(a) adsorbing a VIII:C/VIII:RP complex from a plasma or commercial concentrate source onto particles bound to a monoclonal antibody specific to VIII:RP,
(b) eluting the VIII:C,
(c) adsorbing the VIII:C obtained in step (b) in another adsorption to concentrate and further purify same,
(d) eluting the adsorbed VIII:C, and
(e) recovering highly purified and concentrated VIII:C.

4,361,510

BLOOD COAGULATION PROMOTING PRODUCT

Gautam Mitra, Kensington, Calif., assignor to Cutter Laboratories, Inc., Berkeley, Calif.

Division of Ser. No. 153,396, May 27, 1980, abandoned. This application Feb. 2, 1982, Ser. No. 344,912
Int. Cl.³ A61K *35/14, 35/16*; C07G *7/00*
U.S. Cl. 260—112 B **16 Claims**

1. A process for the production of a blood coagulation complex containing coagulation Factors II, VII, IX, and X in non-activated form, which comprises the steps of
(a) applying a blood plasma fraction containing coagulation Factors II, VII, IX, and X to an anion exchanger to adsorb the coagulation Factors,
(b) washing the exchanger with an aqueous solution containing a non-volatile salt and citrate ions and having an ionic strength sufficient to remove less strongly bound blood plasma proteins from the exchanger but insufficient to remove the adsorbed coagulation Factors,
(c) eluting the adsorbed coagulation Factors from the exchanger with an aqueous solution containing a non-volatile salt and citrate ions and having an ionic strength sufficient to remove the coagulation Factors, but insufficient to remove blood plasma proteins more strongly bound to the exchanger, and
(d) treating the eluate to reduce the concentration of non-volatile salt to a physiologically acceptable level.

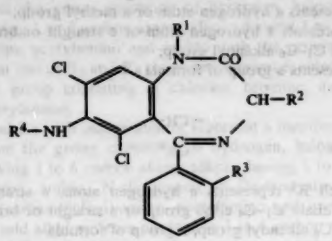
4,361,511

BENZODIAZEPINE DERIVATIVES

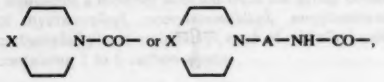
Quirico Branca, Birsfelden; Albert E. Fischli, Riehen, both of Switzerland, and Andre Szente, Dee Why, Australia, assignors to Hoffmann-La Roche Inc., Nutley, N.Y.

Filed Jan. 16, 1981, Ser. No. 225,746
Claims priority, application Switzerland, Feb. 8, 1980, 1039/80
Int. Cl.³ C07D *243/24*
U.S. Cl. 260—239.3 D **12 Claims**

1. A compound of the formula



wherein R^1 is a lower alkyl group, R^2 is a hydrogen atom or a lower alkyl group, R^3 is a hydrogen or halogen atom, R^4 is a hydrogen atom or a group of the formula R^5-CO-, R^6R^7N-CO-,



A is a lower alkylene group, X is an oxygen or sulphur atom or a group of the formula $>N-R^8$, R^5 is a lower alkyl or lower haloalkyl group, R^6 is a hydrogen atom or a lower alkyl group, R^7 is a lower alkyl group and R^8 is a hydrogen atom or a lower alkyl or lower hydroxyalkyl group, and their pharmaceutically acceptable acid addition salts.

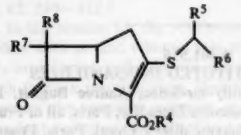
4,361,512

2-SUBSTITUTED THIO-6-SUBSTITUTED-CARBAPEN-2-EM-3-CARBOXYLIC ACIDS

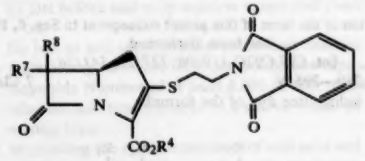
Ronald W. Ratcliffe, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 26, 1980, Ser. No. 210,691
Int. Cl.³ C07D 487/04
U.S. Cl. 260—245.2 T **3 Claims**

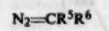
1. The process for preparing the compound of the formula:



which comprises reacting the compound of the formula:



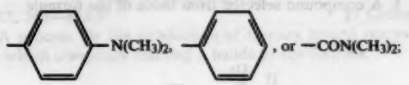
with a diazo reagent:



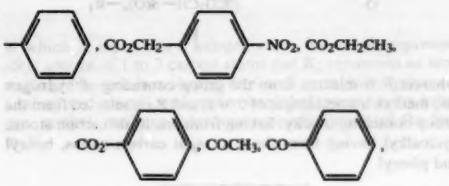
wherein the reaction takes place by dissolving compound II in a solvent such as tetrahydrofuran, dimethoxyethane, or toluene; in the presence of a catalytic amount of a copper catalyst which is copper II 2,4-pentanedione; then adding an excess of the diazo reagent III; at a temperature of about 55°–57° C. for about 1.5 hours; then quenching and isolating the resultant product Compound I;

wherein R^4 is p-nitrobenzyl, p-methoxybenzyl, o-nitrobenzyl, 2-trimethylsilyl or trimethylsilyl, or benzyl;

R^6 is hydrogen, $CO_2CH_2CH_3$, CH_3, CHO, CN;

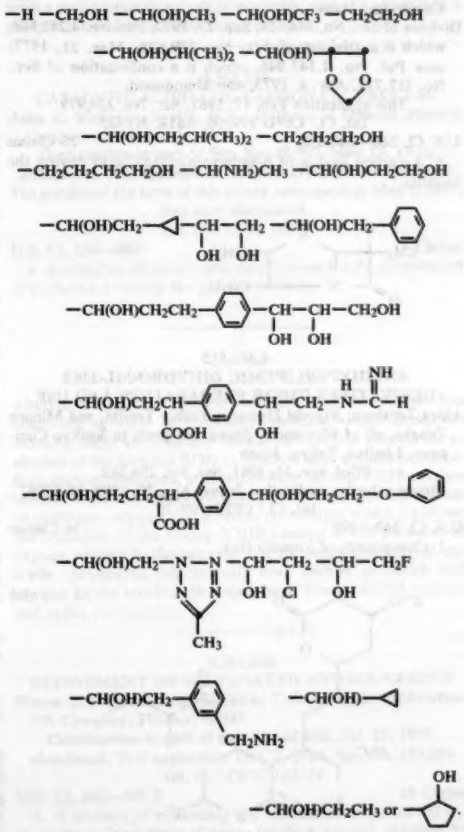


R^5 is CO_2CH_2



CHO, CN, or $CON(CH_3)_2$;

R^8 is hydrogen, CH_3 or OCH_3; and R^7 is

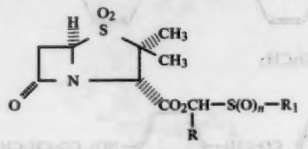


4,361,513
ESTERS OF PENICILLANIC ACID SULFONE

David L. Hageman, Colchester, and Thomas C. Crawford, Norwich, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Dec. 11, 1980, Ser. No. 215,215
Int. Cl.³ C07D *499/00*; A61K *31/425*
U.S. Cl. 260—245.2 R 10 Claims

1. A compound selected from those of the formula



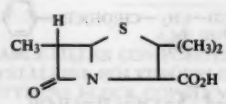
wherein R is selected from the group consisting of hydrogen and methyl, n is an integer of 0 or 1, and R_1 is selected from the group consisting of alkyl having from one to six carbon atoms, cycloalkyl having from three to eight carbon atoms, benzyl and phenyl.

4,361,514
CARBON ANALOGS OF PENICILLIN

John C. Sheehan, Lexington, and Young S. Lo, Boston, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 946,438, Sep. 27, 1978, Pat. No. 4,282,149, which is a Division of Ser. No. 779,828, Mar. 21, 1977; now Pat. No. 4,143,046, which is a continuation of Ser. No. 317,772, Apr. 4, 1973, now abandoned.
This application Feb. 17, 1981, Ser. No. 234,979
Int. Cl.³ C07D *499/00*; A61K *31/425*
U.S. Cl. 260—245.2 R 35 Claims

1. A carbon analog of 6-aminopenicillanic acid having the formula:

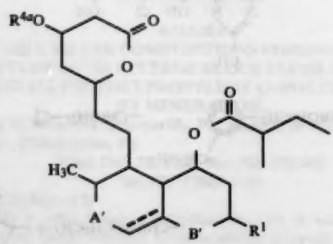


4,361,515
ANTIHYPERLIPEMIC DIHYDRO-ML-236B DERIVATIVES, THEIR PREPARATION AND USE

Akira Terahara; Kiyoshi Hamano; Yoshio Tsujita, and Minoru Tanaka, all of Hiromachi, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Filed Apr. 21, 1981, Ser. No. 256,243
Claims priority, application Japan, Apr. 22, 1980, 55-53057
Int. Cl.³ C07D *309/30*
U.S. Cl. 549—292 14 Claims

1. Compounds of formula (Ic):



(Ic)

wherein: the bond represents a single or double bond;
R^1 represents a hydrogen atom or a methyl group;
R^{4a} represents a hydrogen atom or a straight or branched chain C_1–C_6 alkanoyl group;
A′ represents a group of formula

in which R^8 represents a hydrogen atom, a straight or branched chain C_1–C_4 alkyl group or a straight or branched chain C_2–C_6 alkanoyl group, a group of formula

in which X represents a halogen atom, or a group of formula

and
B′ represents a group of formula

in which R^9 represents a hydrogen atom or a straight or branched chain C_2–C_6 alkanoyl group, a group of formula

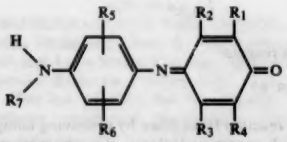
in which X is as defined above, or a group of formula

4,361,516
N-MONOSUBSTITUTED INDOANILINES

Gregoire Kalopissis, Neuilly-sur-Seine; Andree Bugaut, Boulogne-sur-Seine, and Francoise Estradier, Paris, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Division of Ser. No. 530,975, Dec. 9, 1974, Pat. No. 4,007,747.
This application Oct. 6, 1976, Ser. No. 730,068
Claims priority, application Luxembourg, Dec. 12, 1973, 068988
The portion of the term of this patent subsequent to Sep. 6, 1994, has been disclaimed.
Int. Cl.³ C07C *119/06*, *127/19*, *143/74*
U.S. Cl. 260—396 N 7 Claims

1. An indoaniline dye of the formula



wherein
R_1 and R_4 each independently represent a member selected

from the group consisting of hydrogen, halogen, alkyl having 1 to 6 carbon atoms, alkoxy having 1 to 6 carbon atoms, acetylamino and ureido with the proviso that at least one of R_1 and R_4 represents a member selected from the group consisting of chlorine, bromine, ureido and acetylamino;

R_2 and R_3 each independently represent a member selected from the group consisting of hydrogen, halogen, alkyl having 1 to 6 carbon atoms, alkoxy having 1 to 6 carbon atoms, amino, N-alkylamino, N-(hydroxyalkyl)-amino, N-(carbamylalkyl)-amino, acetylamino and ureido, each of said alkyl moieties containing 1 to 6 carbon atoms;

R_5 and R_6 each independently represent a member selected from the group consisting of hydrogen, halogen, alkyl having 1 to 6carbon atoms and alkoxy having 1 to 6 carbon atoms with the proviso that when R_5 and R_6 are both other than hydrogen at least one is in a meta-position relative to the NHR_7; and

R_7 represents a member selected from the group consisting of hydroxyalkyl, acetylaminoalkyl, mesylaminoalkyl, carbamylalkyl and aminoalkyl, each of said alkyl moieties containing 1 to 6 carbon atoms.

4,361,517

CONTINUOUS SOAP STOCK SPLITTING

Alan J. Duff, Tonbridge, United Kingdom, and Jacobus C. Segers, Nieuwerkerk aan de IJssel, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 866,435, Jan. 3, 1978, abandoned, and Ser. No. 719,766, Sep. 2, 1976, abandoned. This application Jun. 26, 1980, Ser. No. 163,251

Claims priority, application United Kingdom, Sep. 4, 1975, 36461/75

Int. Cl.³ C11B *13/00*

U.S. Cl. 260—412.5 **8 Claims**

1. In the process for the continuous neutralization of a soap solution with an acid wherein said process comprises continuously introducing said acid and said soap solution into a vessel which forms a reaction zone, thereto react; and continuously removing the resulting reaction products from said vessel, wherein the relative amounts of said acid and said soap solution are controlled via a signal derived from the measurement of pH of said reaction product, the improvement comprising:

a. adding said acid to a stream of soap solution:

(i) just before said soap solution enters said reaction zone, or

(ii) just as said soap solution enters said reaction zone;

b. maintaining turbulent flow conditions corresponding to a Reynolds Number of at least 8,000 in said reaction zone, wherein said reaction zone is a stirred vessel of the back mixing type;

c. controlling the relative amounts of said acid and said soap solution via a signal derived from the measurement of the pH of the turbulent reaction mixture; and

d. keeping the ratio of the total dead time to the mean residence time of said mixture in said reaction zone at a value less than unity,

the improvement thereby providing improved stability of the pH of said continuous neutralization resulting in reduced acid oil loss through the formation of acid soap while enabling improved savings in chemicals and the lessening of effluent problems.

4,361,518

MANUFACTURE OF ISOCYANATES

Balwant Singh, and William A. Henderson, Jr., both of Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 17, 1981, Ser. No. 331,696

Int. Cl.³ C07C *118/00*

U.S. Cl. 260—453 P **17 Claims**

1. A process for the production of tertiary benzyl isocyanates which comprises reacting a halide of the formula

in which X represents a halogen atom, R_1 and R_2 represent alkyl groups of 1 to 3 carbon atoms and R_3 represents an aromatic group such as a phenyl, bisphenyl or naphthyl group or a substituted phenyl, biphenyl or naphthyl group having halogen, methyl, methoxy substituents or substituents of the formula

with a stoichiometric excess of isocyanic acid in a solution in a solvent for said halide and isocyanic acid.

4,361,519

CATALYTIC ALIPHATIC CARBONATE PROCESS

John E. Hallgren, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 38,907, May 14, 1979, abandoned. This application Oct. 14, 1980, Ser. No. 196,580

The portion of the term of this patent subsequent to May 6, 1997, has been disclaimed.

Int. Cl.³ C07C *69/96*

U.S. Cl. 260—463 **9 Claims**

1. A catalytic aliphatic carbonate process for the preparation of carbonates having the general formula:

wherein R is a hydrocarbon radical selected from the class consisting of alkyl or cycloalkyl radicals, which comprises reacting under substantially anhydrous reaction conditions, an alcohol of the formula ROH in which R is as defined hereinbefore, carbon monoxide, a Bronsted base, Group VIIIB catalyst selected from ruthenium, rhodium, palladium, osmium, iridium or platinum, oxygen and a redox co-catalyst which catalyses the oxidation of the Group VIIIB catalyst in the presence of oxygen subject to the proviso that the process is carried out while introducing concurrently both carbon monoxide and oxygen to the alcohol, Bronsted base, Group VIIIB catalyst and redox co-reactants.

4,361,520

REFINEMENT OF SULFONATED HYDROCARBONS

Wayne E. Luetzelschwab, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 61,130, Jul. 26, 1979, abandoned. This application Oct. 2, 1980, Ser. No. 193,069

Int. Cl.³ C07C *143/24*

U.S. Cl. 260—505 P **15 Claims**

1. A process of enhancing the separation of unreacted hydrocarbons from the sulfonated product mixture obtained by

contacting about 5 to about 30 grams sulfur trioxide per 100 kilograms of a hydrocarbon selected from the group consisting of crude oils, top crude oils, gas oils and mixtures thereof in a reaction zone at a temperature of from about 27° C. to about 121° C. and a pressure from about 0.01 to about 150 atmospheres for a reaction time of from about 0.001 to about 3600 seconds to form a sulfonated product mixture from which a raffinate comprising free unreacted hydrocarbons separates, said method comprising the steps of:

(a) removing a portion of said raffinate thereby leaving the remainder of said raffinate with said sulfonated product mixture;

(b) neutralizing with a base said sulfonated product mixture containing said remainder of said raffinate to form a neutralized sulfonated product mixture and a second raffinate; and

(c) thereafter removing said second raffinate from the neutralized sulfonated product mixture, the remainder of said raffinate in step (a) being in an amount sufficient to enhance the separation rate of said second raffinate and said neutralized sulfonated product mixture thereby enabling the removing of step (c) to take place at a rate faster than that which would take place if substantially all of said raffinate had been removed prior to step (b).

4,361,521

DIFLUOROPHTHALOYL FLUORIDE

Michael J. Fifolt, Grand Island, N.Y., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Jan. 26, 1981, Ser. No. 228,656
Int. Cl.³ C07C *63/22*
U.S. Cl. 260—544 F **1 Claim**

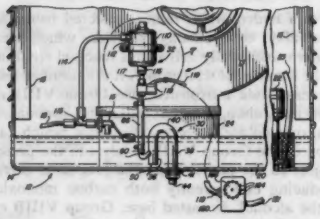
1. 4,5-difluorophthaloyl fluoride.

4,361,522

AUTOMATIC FLUSHING AND DRAINING APPARATUS FOR EVAPORATIVE COOLERS

Adam D. Goettl, 4960 E. Palomino Rd., Phoenix, Ariz. 85018

Continuation-in-part of Ser. No. 296,775, Aug. 27, 1981, Pat. No. 4,333,887, which is a continuation-in-part of Ser. No. 222,552, Jan. 5, 1981, Pat. No. 4,289,713, which is a continuation-in-part of Ser. No. 115,041, Jan. 24, 1980, Pat. No. 4,225,361, which is a continuation-in-part of Ser. No. 7,027, Jan. 29, 1979, Pat. No. 4,192,832. This application Oct. 22, 1981, Ser. No. 313,727
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—66 **26 Claims**



1. An automatic flushing and draining apparatus for an evaporative cooler comprising:

(a) an evaporative cooler having a sump means for containing a water supply which is used in the operation of said evaporative cooler and having means for maintaining the water supply at a predetermined operating level within said sump means, said sump means having an outlet opening in the bottom thereof;

(b) siphon drain valve means mounted in the outlet opening of said sump means and having a water inlet opening adjacent the bottom of said sump means with a water inlet passage extending from the water inlet opening to a water passage zone which is disposed above the operating water level of said sump means;

(c) injector means for receiving water under pressure and injecting it into the water inlet passage of said siphon drain valve means toward the water passage zone for flooding thereof; and

(d) positive priming means connected between an external source of water under pressure and said injector means, said positive priming means having a first state which prevents the flow of water under pressure to said injector means and a second state which allows the flow of water under pressure to said injector means.

25. An evaporative cooler comprising in combination:

(a) an evaporative cooler having a sump for containing an operational water supply and having means for supplying the water and maintaining it at a predetermined level in the sump;

(b) a draining apparatus mounted in the sump of said evaporative cooler and being actuatable from a normally inoperative state to an operative state for draining the operational water supply from the sump of said evaporative cooler and returning to its normally inoperative state upon completion of sump drainage;

(c) timing means coupled to said draining apparatus for actuating said draining apparatus, said timing means having a first actuating means for actuating said draining apparatus at a predetermined frequency rate and having a normally inoperative second actuating means which when enabled increases the rate at which said timing means actuates said draining apparatus; and

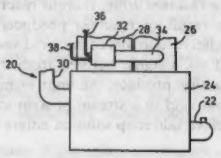
(d) sensing means in said evaporative cooler and coupled to the second actuating means of said timing means, said sensing means for sensing the water evaporation rate and enabling the second actuating means of said timing means when the water evaporation rate is below a predetermined value.

4,361,523

HUMIDIFIER

Shepherd, Charles G., Oakville, Canada, assignor to B. D. Wait Co. Limited, Oakville, Canada

Continuation of Ser. No. 84,938, Oct. 15, 1979, abandoned. This application Apr. 24, 1981, Ser. No. 257,441
Claims priority, application Canada, Oct. 10, 1979, 337350
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—92 **4 Claims**



4. Equipment for heating a building and for maintaining an acceptable humidity in the building, the equipment comprising:

a forced air furnace having a hot air outlet duct and a cold air return duct, each of these ducts having one of two openings; and

a humidifier coupled to the ducts between the two openings for receiving air caused to flow through the humidifier by a pressure differential existing between the outlet duct and the return duct, the humidifier comprising: a housing attached to one of the outlet and return ducts and having an opening in registration with the opening in this duct, horizontal and similar first and second walls extending in parallel forwardly from the back, a pair of ends meeting the back and extending in parallel between the first and

second walls to form with the walls an open front, the ends projecting forwardly beyond the first and second walls and one of the ends defining a first opening midway between the first and second walls; means connecting said first opening to the opening in the other of the outlet and return ducts; a bearing assembly coupled to said one of the pair of ends; drive means coupled to the other of the pair of ends; a door extending over the front between the first and second walls and engaging the forward extremities of the pair of ends to close the chamber; a water tray supported by the lowermost one of the first and second walls, the uppermost extremity of the tray being spaced from the uppermost one of the first and second walls by a predetermined distance; a water inlet assembly contained in the housing and coupled to one of the pair of ends for releasing water into the water tray only to a predetermined level and to maintain this level in use; and a cylindrical humidifier drum having a diameter no greater than said predetermined distance, the humidifier drum being coupled to the drive means and supported by the bearing assembly for rotation by the drive means with the drum projecting into the water below said predetermined level.

4,361,524

COOLING TOWER WITH PLUME PREVENTION SYSTEM

Larry D. Howlett, 913 Suburban Apartments, DeKalb, Ill. 60115

Filed Oct. 25, 1977, Ser. No. 845,122
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—150 **2 Claims**

1. In a wet cooling tower system including an influent hot water conduit leading from a source of hot water to be cooled, an inlet air duct and a cooled water conduit all connected into a tower containing means for bringing the air into contact with the hot water surfaces and having an exhaust air outlet, the improvement which comprises means for preventing plume formation, said plume preventing means comprising an indirect heat exchanger connected in the inlet air duct, a conduit connecting the cooling tower source of hot water to said exchanger as an exchanger medium for heating the inlet air and an exchanger outlet conduit connecting said exchanger with the influent hot water conduit to conduct the exchanger medium into the influent hot water conduit to mix with the influent hot water to partialy cool the same prior to introduction into the tower, and means for controlling the rate of flow of exchanger medium through said heat exchanger.

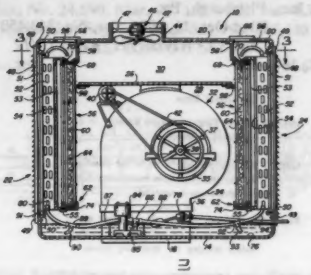
4,361,525

AIR COOLING APPARATUS

Billy M. Leyland, 7537 N. 16th La., Phoenix, Ariz. 85021

Continuation-in-part of Ser. No. 207,955, Nov. 18, 1980, Pat. No. 4,312,819. This application Nov. 2, 1981, Ser. No. 317,118
The portion of the term of this patent subsequent to Jan. 26, 1999, has been disclaimed.
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—152 **8 Claims**

1. An air cooling apparatus comprising in combination:
a. an evaporative cooler including,
I. a cabinet having at least one air inlet opening,
II. an air handler in said cabinet for drawing ambient air through said air inlet opening into said cabinet,
III. a wettable fibrous pad mounted in said air inlet opening,
IV. a sump for containing a water supply;
b. a heat exchanger mounted in said air inlet opening of said cabinet in front of said wettable fibrous pad in overlaying relationship so that the ambient air will pass through said heat exchanger prior to passing through said wettable fibrous pad; and
c. pump means in said evaporative cooler for recirculatingly supplying water from said sump through said heat exchanger and from said heat exchanger through said wettable fibrous pad.



4,361,526

THERMOPLASTIC COMPOSITE ROCKET PROPELLANT

Henry C. Allen, Decatur, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 12, 1981, Ser. No. 272,859
Int. Cl.³ C06B *21/00*
U.S. Cl. 264—3 C **4 Claims**

1. A process for utilizing a thermoplastic elastomer as a binder for a composite propellant composition and for forming a solid propellant grain of same, said process comprising:
(i) providing a thermoplastic elastomer which consists of hard segments having substantially crystalline properties and soft segments having substantially amorphous properties, said hard segments imparting rigid properties to a solid propellant composition with which it is combined, and said soft segments imparting rubbery properties to a solid propellant composition with which it is combined;
(ii) dissolving said thermoplastic elastomer in an excess amount of a volatile organic solvent;
(iii) adding and mixing an aziridine compound as a bonding agent in said dissolved thermoplastic elastomer to enhance the adhesive bond between the binder material and propellant composition solids;
(iv) continue adding and mixing into said dissolved thermoplastic elastomer, propellant solids including aluminum powder as a fuel element and two different nominal particle sizes of ammonium perchlorate as oxidizer to increase particle packing efficiency;
(v) continue mixing said solids in said thermoplastic elastomer solution to achieve a uniform mixture of said composite propellant composition;
(vi) evaporating said organic solvent from said composite propellant composition to yield a dry solid composite propellant composition free from said volatile organic solvent;
(vii) chopping said dried solid composite propellant composition into pellets;
(viii) placing a predetermined amount of said pellets in a mold and heating to 150° C. to yield a viscous fluid of said solid composite propellant composition;
(ix) pressing said viscous fluid in said mold; and,
(x) cooling said mold and releasing from said mold a formed solid composite propellant grain.

4,361,527
METHOD OF FORMING STRETCHED ACRYLIC SHEETS

Robert B. Rau, Canyon Country, Calif., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 21, 1981, Ser. No. 313,450
Int. Cl.³ B29D *7/22*; B29C *17/12*
U.S. Cl. 264—25 **8 Claims**

Operational Steps

Step 1) Preheat Billet of Acrylic Material to a stretching temperature.

Step 2) Apply stretching forces to the Billet of Acrylic Material while maintaining it at the stretching temperature.

Step 3) Controllably Cooling the stretched acrylic sheet to below its softening temperature before relaxing the stretching forces.

Step 4) Heat major surfaces of the stretched acrylic sheet to an elevated temperature to generate additional surface deformations.

Step 5) Cool the stretched acrylic sheet.

Step 6) Polish the major surfaces of the stretched acrylic sheet to remove surface deformations.

Step 7) Form a vision panel from the stretched acrylic sheet at an elevated temperature.

1. In a method of producing a vision panel having a stretched acrylic sheet as a portion thereof, comprising the steps of applying stretching forces at a first elevated temperature to a blank of acrylic material to provide a sheet of a desired physical configuration, cooling said sheet to a second temperature below the softening temperature of said acrylic material, initially polishing the major surfaces of said sheet to remove surface deformations therefrom, and heating said sheet to a third elevated temperature to form said vision panel, whereby said heating step generates additional surface deformations upon said major surfaces of said sheet, the improvement comprising the steps of:

after practicing said cooling step and before practicing said heating step, increasing the temperature of at least the major surfaces of said sheet to a fourth elevated temperature sufficient to initiate the generation of said additional surface deformations without substantially altering the desired physical configuration of said sheet;

recooling said sheet to a temperature below the softening temperature of said acrylic material; and

secondly polishing the major surfaces of said sheet to remove said additional surface deformations.

4,361,528
METHOD OF MAKING THERMOPLASTIC DENTAL IMPRESSION TRAY

Stephen J. Ginsburg, Ann Arbor, and Frederick E. Draheim, Milford, both of Mich., assignors to Black Knight Investments Limited, Georgetown, Cayman Islands

Filed Aug. 30, 1979, Ser. No. 71,214
Int. Cl.³ A61C *3/00*; B29C *3/00*
U.S. Cl. 264—28 **15 Claims**

1. A method of making a thermoplastic dental impression tray which is capable of being molded in the mouth of a patient after reheating, said method comprising the steps of:

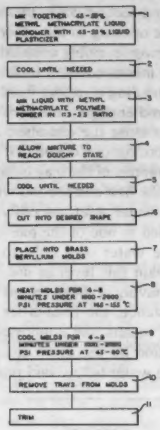
(a) mixing 45–55% by weight of a methylmethacrylate liquid monomer and 45–55% by weight of a suitable liquid plasticizer to form a plasticized liquid monomer;

(b) mixing said plasticized liquid monomer with methylymethacrylate polymer powder in a ratio of 1:3–3.5 parts by weight to form a mixture;

(c) allowing the mixture to reach a doughy-like state;

(d) placing said mixture into a mold conforming to the desired structure of the tray;

(e) heating the mold at a temperature of about 145°–155° C. for about 4–8 minutes under pressure of about 1,000–2,000 p.s.i. to provide a tray that may be subsequently molded in the patient's mouth after heating it to above about 135° F.,



with the tray accurately maintaining its molded structure after removal from the mouth; and

(f) removing the tray from the mold.

4,361,529
METHOD FOR PRODUCING PLATE OR TAPE SHAPED SILICON CRYSTAL BODIES HAVING CRYSTALLINE PILLAR-LIKE STRUCTURES, EQUIVALENT TO COLUMNAR STRUCTURES, FOR LARGE SURFACE SOLAR CELLS

Leopold Hanke, Beyharting, and Helmut Schmelz, Prien, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 15, 1981, Ser. No. 254,406
Claims priority, application Fed. Rep. of Germany, May 9, 1980, 3017831
Int. Cl.³ C04B *35/14*
U.S. Cl. 264—65 **2 Claims**

1. In a method of producing plate- or tape-shaped silicon crystal bodies having crystalline pillar structures therein, which are substantially equivalent to crystalline columnar structures, without melting of the base material which forms such silicon bodies and which bodies are useful for processing into large-surface solar cells, wherein:

a slurry is formed from an admixture of silicon powder comprised of silicon particles having an average grain size in the range of less than about 1 μm and a compatible liquid binder;

a relatively thin layer of such slurry is extruded onto a base and dried until it becomes essentially self-supporting with removal of the base; and

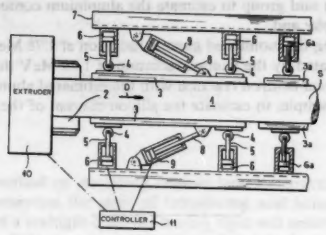
such self-supporting slurry layer is sintered on a temperature-stable inert base in a protective gas atmosphere at a sintering temperature below about 1430° C. in such a manner that a layer of monocrystalline silicon particles is generated, which particles have an average diameter substantially corresponding to the thickness of the dried slurry layer, the improvement comprising wherein:

said sintering occurs in a gas atmosphere comprised of an admixture of argon and hydrogen containing an amount of hydrogen up to a maximum of about 20% by volume.

4,361,530
METHOD OF AND APPARATUS FOR SHAPING A STRAND DURING EXTRUSION

Günter Peer, Friedberg-Stätzling, Fed. Rep. of Germany, assignor to Anton Heggenstaller, Unterbernbach, Fed. Rep. of Germany

Filed May 6, 1981, Ser. No. 260,928
Claims priority, application Fed. Rep. of Germany, May 2, 1980, 3016926
Int. Cl.³ B29J 5/10
U.S. Cl. 264—120 10 Claims



1. In combination with an extruder having a nozzle from which a strand is extruded stepwise in a longitudinal direction with an extrusion force that varies periodically with the stepwise extrusion of said strand, a strand-shaping assembly comprising:

a plurality of longitudinally extending walls defining a longitudinal passage aligned with said nozzle and receiving said strand with same transversely engaging said walls, said walls including a pair of transversely opposite and substantially parallel walls;

means mounting said opposite walls for movement transversely of said direction and limitedly in said direction;

first biasing means for urging said opposite walls toward each other with a predetermined transverse biasing force; and

second biasing means for urging said opposite walls longitudinally toward said nozzle with a longitudinal biasing force varying generally synchronously with said extrusion force and exceeded thereby once during each extrusion step, whereby when said extrusion force exceeds said longitudinal biasing force said opposite walls move downstream with said strand and when said longitudinal biasing force exceeds said extrusion force said opposite walls move upstream along said strand.

5. A method of operating an extruding apparatus having an extruder with a nozzle directed longitudinally into a longitudinal passage defined by a plurality of longitudinally extending walls including at least two opposite transversely and longitudinally displaceable walls, said method comprising the steps of:

extruding a plastic strand longitudinally and stepwise into said passage from said nozzle with an extrusion force and pressure that vary periodically with the stepwise extrusion of said strand;

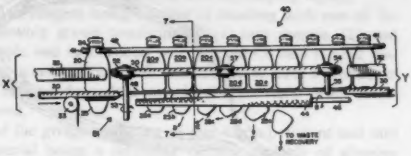
urging said opposite walls transversely toward each other with a transverse biasing force; and

urging said opposite walls longitudinally toward said nozzle with a longitudinal biasing force varying generally synchronously with said extrusion force and exceeded thereby once during each extrusion step, whereby when said extrusion force exceeds said longitudinal force said opposite walls move downstream with said strand and when said longitudinal biasing force exceeds said extrusion force said opposite walls move upstream along said strand.

4,361,531
CONTAINER MOLDING AND TRIMMING METHOD AND APPARATUS

Michael Black, Mount Dora, Fla., assignor to Doric Foods Corporation, Mount Dora, Fla.

Division of Ser. No. 24,690, Mar. 28, 1979, Pat. No. 4,305,904.
This application Sep. 24, 1981, Ser. No. 305,158
Int. Cl.³ B29C 17/12
U.S. Cl. 264—161 6 Claims



1. A method for trimming an unwanted tail flash portion from molded plastic containers, said method comprising the steps of:

conveying said containers along a first direction;

providing a gripping means having gripping surfaces aligned with said first direction;

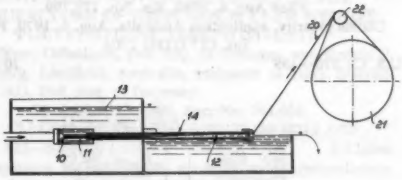
positioning said gripping means to engage and grip said tail flash portion of each of said containers while said containers are conveyed along said first direction; and

producing a downward and rearward tearing force on said tail flash portion immediately after said engagement with said gripping means to effectuate a complete removal of the unwanted portion by said tearing force.

4,361,532
PROCESS FOR THE CONTINUOUS SPINNING OF VISCOSE RAYON

Tommaso Benai, Rieti; Ugo Paoletti, Monza, and Novello Leoncini, Limbiate, all of Italy, assignors to Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

Filed Jan. 9, 1981, Ser. No. 223,925
Int. Cl.³ D01F 3/12
U.S. Cl. 264—188 6 Claims

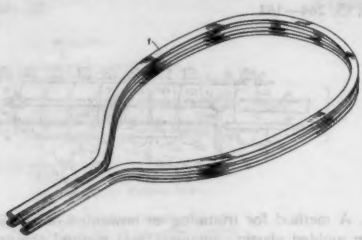


1. A process of continuously spinning viscose rayon yarns, comprising the steps of extruding said viscose into a coagulating bath to form filaments having a coagulation index of between 15 and 18 and concurrently stretching said filaments to the desired final stretch ratio and then subjecting the filaments to a two-stage coagulation treatment without any further stretching; (1) a first stage which comprises advancing the filaments outside of the bath without further chemical treatment until the filaments spontaneously attain a partial coagulation in which a coagulation index of between 5 and 8, is attained and (2) a second stage which comprises contacting the filaments with an acid bath at temperatures between 50° and 100° C. until a coagulation index between 0 and 1 is attained.

4,361,533
METHOD FOR MAKING RACKET FRAMES

Herbert R. Jenks, deceased, late of Carson City, Nev., by Betty J. Jenks, executrix, Reno, Nev., assignors to AMF Incorporated, White Plains, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,495
Int. Cl.³ B29C 7/00; B29D 3/02
U.S. Cl. 264—258 6 Claims

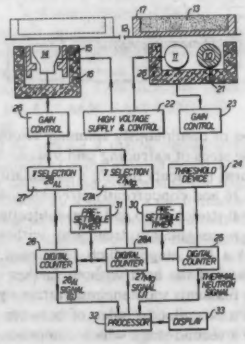


1. A method of making an all fiberglass racket frame having a general hairpin shape with I-shape cross section, comprising positioning two small inner tubes of prepreg fiberglass turns wound on inner solid silicone rubber rods in a large outer tube of prepreg fiberglass turns at opposite sides of said outer tube in spaced relationship, pinching said outer tube lengthwise thereof into a figure 8 cross section shape with said inner tubes with their inner rods being positioned at opposite ends of said figure 8 cross section shape, mounting said subassembly of figure 8 cross section shape with inner tubes and rods in a multipart mold having an interior cavity corresponding to said hairpin shape with I-shape cross section, heating said mold to cure said fiberglass and cause said silicone rubber to expand whereby said fiberglass is urged with internal pressure against the interior surfaces of said mold to form said fiberglass into said hairpin shape with I-shape cross section having opposite hollow ends interconnected by an integral web, cooling said mold, and then pulling lengthwise on said silicone rubber rods to reduce their diameter to free them from within the formed racket frame.

4,361,534
NEUTRON ACTIVATION ANALYSIS

Mihai Borsaru, and Peter L. Eisler, both of Victoria, Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Filed Aug. 6, 1980, Ser. No. 175,799
Claims priority, application Australia, Aug. 6, 1979, PD9897
Int. Cl.³ G21G 1/06
U.S. Cl. 376—159 20 Claims



1. A method of simultaneously analysing the aluminium and silicon content of a sample of material using only a single irradiation from a single neutron source, comprises the steps of:

(a) irradiating the sample only with fast neutrons from said single neutron source,

(b) monitoring the thermal neutron flux within the sample, which flux results from moderation of the fast neutrons within the sample material,

(c) monitoring the gamma radiation from the irradiated sample at 1.78 MeV and at an energy selected from the group consisting of (1) 1.015 MeV, (2) 0.844 MeV and (3) 1.015 and 0.844 MeV;

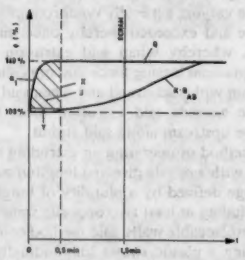
(d) using the monitored gamma radiation of energy selected from said group to estimate the aluminium content of the sample; and

(e) using the monitored gamma radiation at 1.78 MeV, compensated by the gamma radiation at 1.78 MeV due to the thermal neutron reaction with the estimated aluminium in the sample, to estimate the silicon content of the sample.

4,361,535
CONTROL SYSTEM AND PROCESS FOR THE OPERATION OF NUCLEAR REACTORS

Klaus Friedrich, Schwetzingen; Rainer Nicolai, Hassloch; Fritz Schweiger, Hagen, and Winfried Wachholz, Heddesheim, all of Fed. Rep. of Germany, assignors to Hochtemperatur-Reaktorbau GmbH, Cologne and Hochtemperatur-Kernkraftwerk GmbH, Uentrop, both of, Fed. Rep. of Germany

Continuation of Ser. No. 925,757, Jul. 18, 1978, abandoned, which is a continuation of Ser. No. 644,041, Dec. 24, 1975, abandoned. This application Feb. 26, 1980, Ser. No. 124,929
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1974, 2461389
Int. Cl.³ G21C 7/06
U.S. Cl. 376—215 13 Claims



1. An open-loop control process for operating nuclear reactors having a reactor core and a circuit for carrying out a work cycle, comprising:

continuously generating over a discrete time interval the integral of the output produced by said reactor core minus the output removed in the same discrete time interval in said circuit of said reactor,

continuously integrating said integral over said discrete time inteval, and

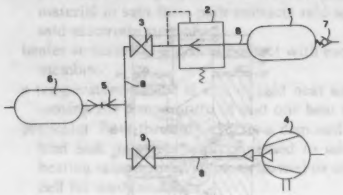
utilizing predetermined threshold values of the integral and the determined integral values as parameters for shutdown of said reactor.

4,361,536

METHOD FOR STERILIZING CONTACT LENSES

Stefania Leopardi, Rome, Italy, assignor to Industrie Ottiche Riunite S.p.A., Marghera-Venezia, Italy

Filed Feb. 23, 1981, Ser. No. 236,928
Claims priority, application Italy, Feb. 25, 1980, 20157 A/80
Int. Cl.³ A61L *2/20*
U.S. Cl. 422—33 8 Claims



1. A method of sterilizing contact lenses characterized in that it comprises the steps of introducing said lenses in the interior of a sealtight chamber having rigid and undeformable walls, the following sequence of steps being performed:

(a) introducing in said chamber a carbon dioxide stream to establish therein a predetermined superatmospheric pressure;

(b) producing a vacuum in the interior of said chamber, and

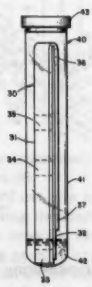
(c) filling said chamber with carbon dioxide until a preselected superatmospheric pressure value is attained, said preselected pressure value being maintained for a period of time to affect sterilization of said lenses.

4,361,537

TEST DEVICE AND METHOD FOR ITS USE

Marshall E. Deutsch, Sudbury, and Louis W. Mead, Lexington, both of Mass., assignors to Thyroid Diagnostics, Inc., Bedford, Mass.

Continuation of Ser. No. 3,076, Jan. 12, 1979, Pat. No. 4,235,601, which is a continuation of Ser. No. 887,886, Mar. 20, 1978, abandoned, which is a division of Ser. No. 701,762, Jul. 2, 1976, Pat. No. 4,094,647. This application Aug. 11, 1980, Ser. No. 177,281
The portion of the term of this patent subsequent to Nov. 25, 1997, has been disclaimed.
Int. Cl.³ G01N *33/52*
U.S. Cl. 422—56 21 Claims



1. A test strip for determining a characteristic of a sample, comprising a length of material capable of transporting a developing liquid therealong by capillarity, said strip including

a first end, at which capillary transport begins;

a second end, at which capillary transport ends;

a plurality of zones positioned between said first and second ends, said zones including

a first zone for receiving said sample,

a second zone impregnated with a first reagent capable of being transported along said strip by said developing liquid,

a third zone downstream of said first and second zones impregnated with a second reagent,

said first and second zones being spaced sufficiently from said first end to permit contact of said first end but not said first and second zones with said developing liquid,

said first reagent being capable of reacting with one of the following group consisting of (1) said sample, (2) said sample and said second reagent, and (3) said second reagent in competition with said sample, to form a product in an amount dependent on said characteristic being determined,

one of the group consisting of said second reagent and said material being a retarding element capable of slowing capillary transport of a moving element, said moving element being one of the group consisting of said product and said first reagent to thereby separate said product from said first reagent, and

said first reagent having a detectable property that provides a label for said first reagent and for said product to permit one of them to be a detectable agent whose amount is to be detected; and

a measuring location at or downstream of said third zone,

said measuring location being spaced upstream of said second end a distance preselected so that, when transport of said developing liquid along said strip element is terminated by the leading front thereof reaching said second end, said product and said first reagent have been separated sufficiently to permit the amount of said detectable agent to be detected at said location by measuring said detectable property,

whereby, after said sample is placed on said first zone and said first end is dipped into said developing liquid, said developing liquid transports said sample and first reagent to bring about the reaction to form said product, in an amount dependent on said characteristic; said retarding element slows transport of said moving element to spatially separate the two; and the amount of said moving element and thereby said characteristic, is measured at said measurement location by measuring said detectable property.

4,361,538

CONTINUOUS MOVING BED REACTOR FOR MANUFACTURE OF HIGH MOLECULAR WEIGHT POLYETHYLENE TEREPHTHALATE

Ovidiu Dicoi, Offenbach, Fed. Rep. of Germany, and Ronald P. Wainberg, Lindfield, Australia, assignors to Davy International AG, Fed. Rep. of Germany

Filed Mar. 17, 1981, Ser. No. 244,658
Int. Cl.³ G01N *21/85;* G05D *7/00, 23/00;* B01J *8/08*
U.S. Cl. 422—62 2 Claims

1. Apparatus for continuous manufacture of polyethylene terephthalate comprising in combination:

(a) a vertical, cylindrical reactor vessel having an upper end inlet, a lower end outlet for polymer chips and means adapted for feeding polymer chips to said inlet;

(b) a plurality of vertically spaced sample tubes connected to and communicating with the interior of the reactor vessel for the collection of polymer chip samples;

(c) a manifold pipe connected to each of the sample tubes;

(d) means for continuously measuring the apparent melt viscosity of the polymer chips collected from the sample tubes and generating a corresponding first signal, said manifold pipe connecting said means for measuring the apparent melt viscosity with the sample tubes;

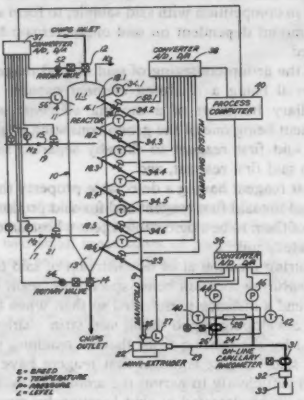
(e) means for controlling the delivery of polymer chip samples from the sample tubes to the means for measuring the apparent melt viscosity such that the apparent melt viscos-

ity of not more than one polymer chip sample is measured at any given time;

(f) means for measuring the temperature of the reactor vessel at each of the sample sites and for generating a corresponding second signal;

(g) means defining at least one gas source connected to the reactor vessel at the lower end thereof for the introduction of countercurrent flow of cold and/or heated gas to vary the temperature within the reaction vessel;

(h) means for measuring the flow rate of polymer chips through the reactor and for generating a corresponding third signal; and



(i) control means that receive the first signal corresponding to apparent melt viscosity, the second signal corresponding to the temperature of the reactor vessel at each of the sample sites, and the third signal corresponding to flow rate of the polymer chips within the reactor vessel, said control means providing appropriate first output control signals to the upper end inlet and the lower end output to vary the flow rate of polymer chips within the reactor vessel, and said control means also providing appropriate second output control signals to control the flow of gas from the gas source and thereby vary the temperature within the reactor vessel, thereby providing a known character and output of polymer from the reactor.

4,361,539

ANALYSIS SYSTEM

Melvin S. Weinberg, Nashua, N.H., and Alan D. Cormier, Newburyport, Mass., assignors to Instrumentation Laboratory Inc., Lexington, Mass.

Continuation-in-part of Ser. No. 146,705, May 5, 1980, abandoned. This application Apr. 2, 1981, Ser. No. 245,981

Int. Cl.³ G01N *27/30*

U.S. Cl. 422—68 **16 Claims**

1. An analysis system for measuring a plurality of parameters of a fluid sample comprising:

a housing,

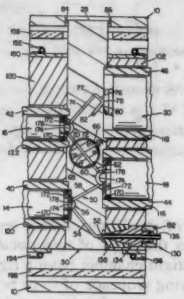
a flow-through cell in said housing, with structure in said cell defining an inlet port, an outlet port, and at least two sensor accepting ports, said cell having opposed faces and an annular sealing surface surrounding each said sensor accepting port, with at least one sensor accepting port in each face,

structure in said cell defining a sensing cavity of generally hemispherical configuration behind each said sensor accepting port,

means defining a sample flow path including a serpentine portion in said cell, said flow path serially connecting said inlet port, said sensing cavities and said outlet port, and including a straight passage segment extending from a sensing cavity in one face to a sensing cavity in the other face, and

a sensor disposed in sealing engagement with each said sensing cavity and forming a portion of said sample flow path so that sample fluid to be analyzed contacts a surface of each said sensor,

each said sensor having a bulb-like sensing projection and each said sensor being seated against a said face of said



flow-through cell with its bulb-like sensing projection in a said hemispherical sensing cavity to define a sensing chamber, each said sensing chamber having a cavity inlet port at the bottom with an inlet passage portion of said sample flow-path sloping upwardly to said cavity inlet port, and a cavity outlet port at the top of said chamber with an outlet passage portion of said sample flow-path sloping upwardly away from said cavity outlet port.

4,361,540

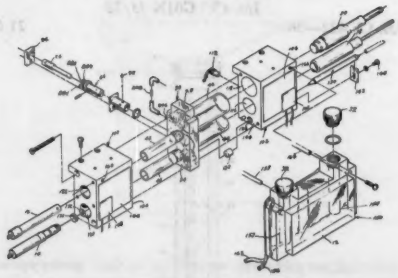
ANALYSIS SYSTEM

Melvin S. Weinberg, Nashua, N.H., and Alan D. Cormier, Newburyport, Mass., assignors to Instrumentation Laboratory Inc., Lexington, Mass.

Continuation of Ser. No. 146,705, May 5, 1980, abandoned. This application Nov. 9, 1981, Ser. No. 319,314

Int. Cl.³ G01N *27/30*

U.S. Cl. 422—68 **18 Claims**



1. An analysis system for measuring a parameter of a fluid sample comprising:

two metal heat sink members,

a flow-through cell disposed between said heat sink members, said flow through cell having parallel opposed surfaces and each of said heat sink members having a surface in rating heat exchange contact with a corresponding one of said opposed cell surfaces,

structure in said cell defining an inlet port, an outlet port, means defining a port capable of accepting a sensor, and

means defining a flow path that serially connects said inlet port to said sensor accepting port and said sensor accepting port to said outlet port,

a bore in one of said heat sink members,

sample analysis electrode structure that has a sensor portion at one end thereof, said sample analysis electrode structure extending through said bore with said sensor portion disposed in sealing engagement in said sensor accepting port and forming a portion of the flow path so that sample material in said flow path contacts said sensor portion of said electrode structure,

heater structure in physical contact with each said heat sink member,

a temperature sensor in one of said heat sink members for sensing the temperature of said one heat sink member,

preheater flow-through structure disposed in one of said heat sink members and connected to said inlet port for heating sample material being flowed to said flow-through cell for analysis, and

flush solution flow-through structure physically supported in heat exchange relation with said heat sink members and connected to said outlet port path for stabilizing the temperature of flush solution to be flowed through said sample flow path.

4,361,541
METHOD FOR EXTRACTION OF URANIUM FROM ORES

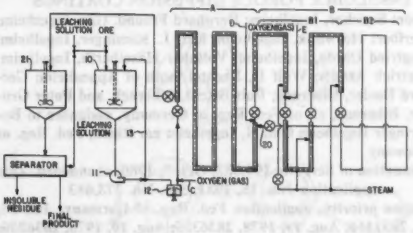
Hubert Bings; Fritz Kampf, both of Lunen; Roland Thome, Bonn; Gerhard Wargalla, Lunen; Gunter Winkhaus, Konigswinter; Hartmüt Pietsch, Bad Homburg von der Hohe; Wolfgang Türke, Schoneck, and Peter Fischer, Bad Vilbel, all of Fed. Rep. of Germany, assignors to Vereinigte Aluminium-Werke Aktiengesellschaft, Bonn and Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, both of, Fed. Rep. of Germany

Filed Sep. 4, 1979, Ser. No. 72,176

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1978, 2840818

Int. Cl.³ C01G *43/01*; B01D *11/02*

U.S. Cl. 423—20 **14 Claims**



1. A method for continuously extracting uranium from ores comprising the steps of:

forming a slurry of ore in a leaching solution;

heating and agitating the slurry by pumping it at high pressure and high velocity through a heated tube reactor while supplying gaseous oxygen at pressures of at least 30 bar at selected locations along the reactor, the velocity of said slurry through said tube reactor and the pressure of said oxygen being selected in relation to the diameter of said tube reactor and the density and viscosity of said slurry to achieve turbulent flow of said slurry in said reactor with Reynolds numbers in excess of 50,000, the velocity of said slurry being such relative to the length of the tube reactor that the retention time of the slurry in the reactor is less than about 15 minutes yet the uranium is substantially completely oxidized to a soluble form of uranium oxide but impurities in the slurry are substantially kept from becoming soluble; and

recovering the uranium oxide solute which is substantially free of impurities.

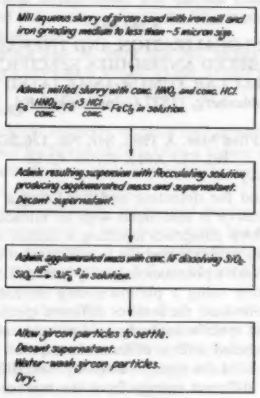
4,361,542
ZIRCON RETRIEVAL

Ronald H. Arendt, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 23, 1981, Ser. No. 324,210

Int. Cl.³ C01G *25/00*

U.S. Cl. 423—81 **7 Claims**


Mill aqueous slurry of zircon sand with iron mill and iron grinding medium to less than ~5 micron size.
Admix milled slurry with conc. HNO3 and conc. HCl.
Admix resulting suspension with flocculating solution producing agglomerated mass and supernatant. Decant supernatant.
Admix agglomerated mass with conc. HF dissolving SiO2.
Allow zircon particles to settle.
Decant supernatant.
Water-wash zircon particles.
Dry.

1. A process for retrieving $ZrSiO_4$ from zircon sand, said zircon sand being comprised of $ZrSiO_4$ and a significant amount of impurities including SiO_2 and iron, which comprises subjecting an aqueous slurry of said zircon sand to comminuting means comprised of iron means fracturing said zircon sand to an average particle size of less than about 5 microns, admixing the recovered fractured sand slurry with nitric acid and hydrochloric acid oxidizing its iron component to ferric ion and reacting said ferric ion with said hydrochloric acid producing ferric chloride in solution, the concentration and amount of said nitric acid being sufficient to oxidize said iron component to ferric ion leaving no significant amount of said iron component, the concentration and amount of said hydrochloric acid being sufficient to react with said ferric ion to form ferric chloride leaving no significant amount of free ferric ion, admixing the resulting suspension with a flocculating agent agglomerating the suspended particles therein, admixing the resulting agglomerated mass with concentrated hydrofluoric acid dissolving its SiO_2 component, said hydrofluoric acid being admixed in a concentration and amount sufficient to dissolve said SiO_2 component leaving no significant amount of said SiO_2 component, washing the resulting product with water and drying said product, said dried product having an average particle size of less than about 5 microns and consisting essentially of $ZrSiO_4$ and containing no significant amount of impurities.

4,361,543

PROCESS FOR PRODUCING POLYCRYSTALS OF CUBIC BORON NITRIDE

Gennady M. Zhdanovich, ulitsa Chervyakova, 4, kv. 35; Alexandr I. Dudyak, ulitsa Tikotskogo, 22, kv. 55; Mikhail I. Galkov, ulitsa Vaneeva, 6, kv. 30, all of Minsk; Vladimir P. Baraban, ulitsa Frunze, 5, kv. 83, Poltava; Jury V. Zherebtsov, ulitsa Frunze, 88, kv. 71, Poltava; Anatoly P. Zholob, ulitsa K. Libknekhta, 118, Poltava, all of U.S.S.R.; Mikhail M. Zhuk, late of Minsk, U.S.S.R., and by Galina K. Zhuk, administrator, Oishevskogo, 4, kv. 62, Minsk, U.S.S.R.

Filed Apr. 27, 1982, Ser. No. 372,409

Int. Cl.³ C01B *21/06*

U.S. Cl. 423—290 **5 Claims**

1. A process for producing a polycrystal of cubic boron nitride, comprising exposure of hexagonal boron nitride to a pressure of from 40 to 70 kbar at a temperature of from 1,200° to 1,800° C.; stopping heating upon achievement of a degree of conversion of hexagonal boron nitride into cubic boron nitride of from 20 to 65% by weight, increasing pressure to a value of from 80 to 120 kbar, resuming the heating upon achievement of this pressure and elevation of temperature to 1,800°–3,000° C. and conducting the process for a period sufficient to fully convert hexagonal boron nitride into cubic boron nitride.

4,361,544

TUMOR LOCALIZATION AND THERAPY WITH LABELED ANTIBODIES SPECIFIC TO INTRACELLULAR TUMOR-ASSOCIATED MARKERS

Milton D. Goldenberg, 11837 Gainsborough Rd., Potomac, Md. 20854

Filed Mar. 3, 1980, Ser. No. 126,261

Int. Cl.³ A61K *49/00, 43/00*

U.S. Cl. 424—1 **26 Claims**

1. A method for detecting and localizing a tumor which either produces or is associated with an intracellular marker substance, which comprises injecting a human subject parenterally with an antibody specific to said marker substance and radiolabeled with a pharmacologically inert radioisotope capable of detection using a photoscanning device, and normal immunoglobulin from the same or different species as that used to prepare said specific antibody, said normal immunoglobulin being radio-labeled with a different isotope of the same element used to label the specific antibody, said different isotope emitting at a different energy from the marker-specific antibody label and being capable of independent detection by said photoscanning device; and subsequently scanning with said device, the level of activity of said normal immunoglobulin being used to determine the background activity due to non-targeted specific antibody, said background activity being subtracted from the total activity of the specific antibody, whereby the activity of substantially only the targeted, tumor-associated antibody is determined, and thereby detecting and localizing the site or sites of uptake of said labeled antibody by said tumor.

4,361,545

SOLID PHARMACEUTICAL FORMULATIONS FOR SLOW, ZERO ORDER RELEASE VIA CONTROLLED SURFACE EROSION

David R. Powell, and Vithal K. Patel, both of Baudette, Minn., assignors to Rowell Laboratories, Inc., Baudette, Minn.

Continuation-in-part of Ser. No. 40,789, May 21, 1979, Pat. No. 4,264,573. This application Apr. 27, 1981, Ser. No. 258,133

Int. Cl.³ A61K *9/22, 9/26*

U.S. Cl. 424—19 **17 Claims**

1. A solid, orally administrable pharmaceutical tablet composition from which the active ingredient has a slow, zero order release rate attained without layers, beads or enteric materials and without relatively insoluble polymers, waxes or gums when administered orally, said tablet being compressed to a hardness of about 5–20 kg, and being either shaped as a sphere, or else having a ratio of tablet thickness to tablet diameter effective to permit tablet erosion and penetration control sufficient for controlled surface erosion thereof, comprising an essentially homogeneous, granulated mixture of:

(a) an effective amount in the range of about 10–90 wt.% of a pharmacologically active compound having a water solubility (20° C.) of about 1/5–1/500 (w/w);

(b) about 1–40 wt.% of a surface controlling compound which is pharmaceutically acceptable in oral compositions and has a water solubility (20° C.) of about 1/1–1/40 (w/w);

(c) about 2–20 wt.% of an erosion controlling compound which is pharmaceutically acceptable in oral compositions and has a water solubility of about 1/1–1/10 (w/w);

(d) an amount in the range of about 0.05–1.0 wt.%, of a surface activator which is a disintegrating agent for pharmaceutical compositions at which amount the compound is ineffective as a disintegrating agent;

(e) about 0.1–2.0 wt.% of a surfactant which is pharmaceutically acceptable in oral compositions and,

as necessary for tablet manufacturing purposes;

(f) about 1–20 wt.% of a binder which is pharmaceutically acceptable in oral compositions; or

(g) about 0.5–5.0 wt.% of a die wall lubricant which is pharmaceutically acceptable in oral compositions;

the pharmacologically active ingredient thus having a slow, zero order release rate when administered orally, and the pharmacologically active compound not being a lithium compound, and not being penny shaped or pancake shaped wherein the ratio of thickness to diameter is too small for erosion and penetration control.

4,361,546

RETARD FORM OF PHARMACEUTICALS WITH INSOLUBLE POROUS DIFFUSION COATINGS

Herbert Stricker, Ingelheim; Bernhard Freund, Gau-Algesheim; Heribert Harwalik, Ingelheim; Karl L. Rominger, Ingelheim; Siegfried Darda, Ingelheim; Volkmar Häselbarth, Ingelheim; Dietrich Arndts; Wolf D. Bechtel, both of Appenheim; Gerhard Bozler, Biberach; Rolf Brickl, Biberach, and Peter Gruber, Biberach, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Continuation of Ser. No. 194,852, Oct. 7, 1980, abandoned. This application Jun. 15, 1981, Ser. No. 273,643

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1978, 2831164; Aug. 19, 1978, 2836355; Aug. 19, 1978, 2836356; Aug. 19, 1978, 2836357; Aug. 19, 1978, 2836358; Aug. 19, 1978, 2836387; Aug. 19, 1978, 2836388; Aug. 19, 1978, 2836419; Aug. 19, 1978, 2836477; Feb. 14, 1979, 2905602

Int. Cl.³ A61K *9/48, 9/52*

U.S. Cl. 424—19 **25 Claims**

1. A pharmaceutical dosage unit composition consisting essentially of a gelatin capsule containing (1) a disintegrating core comprising (i) dipyridamole or an acid addition salt thereof and (ii) an acid substance in an amount sufficient to make the dipyridamole water-soluble and having a readily water-soluble coating, and (2) a plurality of non-disintegrating cores comprising (i) dipyridamole or an acid addition salt thereof and (ii) an acid substance in an amount sufficient to make the dipyridamole water-soluble and having a coating consisting of from 20 to 90 percent by weight of a water-insoluble film former and from 10 to 80 percent by weight of a water-soluble polymer, the diameter of each of the disintegrating and non-disintegrating cores being at least about 5 mm.

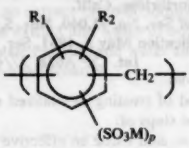
4,361,547
SULFONATED AROMATIC FORMALDEHYDE CONDENSATION POLYMERS AS DENTAL PLAQUE BARRIERS

Tibor Sipos, Lebanon; Robert J. Gander, Whitehouse, and Carl J. Buck, Berkeley Heights, all of N.J., assignors to Johnson & Johnson Products, Inc., New Brunswick, N.J.

Filed Jul. 25, 1980, Ser. No. 172,490
Int. Cl.³ A61K *7/16, 7/22, 31/315, 31/205*
U.S. Cl. 424—56 **8 Claims**

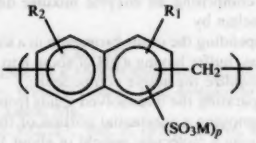
1. An oral hygiene composition comprising an effective amount for preventing deposition of dental plaque on teeth of a sulfonated condensation polymer of formaldehyde with an aromatic compound, said polymer having repeating units selected from the group consisting of structure (A),

structure (A),



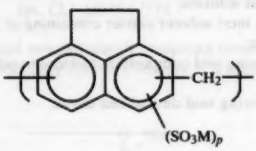
(A)

structure (B),



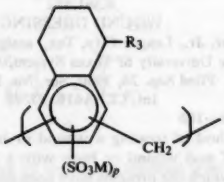
(B)

structure (C),



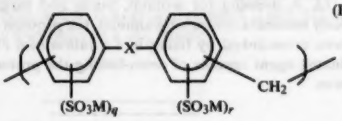
(C)

structure (D),



(D)

and
structure (E),



(E)

wherein R_1 and R_2 are each independently selected from the group consisting of hydrogen, linear or branched alkyl of up to 20 carbon atoms, alkoxy of 1–20 carbon atoms, fluorine, chlorine, and bromine, provided, however, that in structure (B) R_1 and R_2 cannot both be hydrogen; R_3 is hydrogen or an alkoxy group of up to 20 carbon atoms; X is a linkage selected from the group consisting of a direct covalent bond between the aromatic rings, a lower alkylene of 1 to 5 carbon atoms, a lower alkylidene having 2 to 5 carbon atoms, oxygen, sulfur, and $O(CH_2)_nO$, where n is an integer from 2 to 20; p is from about 0.4 to about 1.2, the sum of q and r is between about 0.8 and about 2.4 and M is selected from the group consisting of lithium, sodium, potassium, calcium, magnesium, zinc, aluminum, hydrogen, ammonium and substituted ammonium ions derived from pharmaceutically acceptable organic amines, said polymer having a molecular weight in the range of from about 500 to about 10,000, in a pharmaceutically acceptable oral hygiene vehicle compatible with said polymer.

4,361,548
CONTACT LENS DISINFECTING AND PRESERVING SOLUTION (POLYMERIC)

Francis X. Smith, and Thomas M. Riedhammer, both of Rochester, N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Nov. 28, 1980, Ser. No. 210,960
Int. Cl.³ A61K *31/74, 31/14;* **A01N** *33/12*
U.S. Cl. 424—78 **4 Claims**

1. An aqueous solution for preserving or disinfecting soft contact lenses having as the active antimicrobial agent dimethyldiallylammonium chloride homopolymer, having a molecular weight from about 10,000 to 1,000,000, present in an amount from about 0.00001 to about 0.1 weight percent of said composition.

4,361,549
COMPLEMENT-FIXING MONOCLONAL ANTIBODY TO HUMAN T CELLS, AND METHODS OF PREPARING SAME

Patrick C. Kung, Bridgewater, and Gideon Goldstein, Short Hills, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Apr. 26, 1979, Ser. No. 33,669
Int. Cl.³ C12Q *1/00;* **G01N** *33/48, 33/68, 33/96;* **A61K** *39/395;* **C12N** *5/00, 5/02, 15/00*
U.S. Cl. 424—85 **11 Claims**

1. A monoclonal antibody of class IgG produced by a hybridoma formed by fusion of cells from a mouse myeloma line and spleen cells from a mouse previously immunized with human T cells, which antibody:

(a) reacts with essentially all normal human peripheral T cells and cutaneous T lymphoma cells, but not with normal human peripheral B cells, null cells or macrophages;

(b) reacts with from about 5% to about 10% of normal human thymocytes;

(c) reacts with leukemic cells from humans with T cell chronic lymphoblastic leukemia but does not react with leukemic cells from humans with T cell acute lymphoblastic leukemia, null cell acute lymphoblastic leukemia, or B cell chronic lymphatic leukemia;

(d) reacts weakly with the human T cell line HJD-1 but does not react with CEM, Laz 191, or HMl;

(e) does not react with the Epstein-Barr virus-transformed human B cell lines Laz 007, Laz 156, Laz 256, or SB; and

(f) fixes complement.

5. Mouse complement-fixing monoclonal antibody which reacts with essentially all normal human peripheral T cells but not with normal human peripheral B cells, null cells, or macrophages.

6. A complement-fixing monoclonal antibody which reacts with essentially all normal human peripheral T cells but not with normal human peripheral B cells, null cells, or macrophages prepared by the method which comprises the steps of:

(i) immunizing mice with E rosette positive purified human T cells;

(ii) removing the spleens from said mice and making a suspension of the spleen cells;

(iii) fusing said spleen cells with mouse myeloma cells in the presence of a fusion promoter;

(iv) diluting and culturing the fused cells in separate wells in a medium which will not support the unfused myeloma cells;

(v) evaluating the supernatant in each well containing a hybridoma for the presence of antibody to E rosette positive purified T cells;

(vi) selecting and cloning a hybridoma producing antibody which fixes complement and reacts with essentially all

normal human peripheral T cells but not with normal human peripheral B cells, null cells, or macrophages; and

(vii) recovering the antibody from the supernatant above said clones.

4,361,550

COMPLEMENT-FIXING MONOCLONAL ANTIBODY TO HUMAN SUPPRESSOR T CELLS AND METHODS OF PREPARING SAME

Patrick C. Kung, Bridgewater, and Gideon Goldstein, Short Hills, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Dec. 4, 1979, Ser. No. 99,969

Int. Cl.³ A61K *39/395;* **C12N** *5/00, 5/02, 15/00;* **C12Q** *1/00;* **G01N** *33/48, 33/68, 33/96*

U.S. Cl. 424—85 **11 Claims**

1. A monoclonal antibody of class IgG produced by a hybridoma formed by fusion of cells from mouse myeloma line and spleen cells from a mouse previously immunized with human thymocytes, which antibody:

(a) reacts with suppressor T cells (approximately 30 percent of normal human T cells), but with less than 2 percent of normal human bone marrow cells and not with B cells or Null cells:

(b) reacts with about 80 percent of normal human thymocytes;

(c) reacts with 34 percent of untreated peripheral T cells, 95 percent of peripheral T cells previously treated with monoclonal antibody produced by hybrid cell line ATCC CRL 8002 and complement, and none of the peripheral T cells previously treated with monoclonal antibody produced by hybrid cell line ATCC CRL 8014, and complement; and reacts with 75 percent of untreated thymocytes, 55 percent of thymocytes previously treated with monoclonal antibody produced by hybrid cell line ATCC CRL 8002 and complement, 90 percent of thymocytes previously treated with monoclonal antibody produced by hybrid cell line ATCC CRL 8001 and complement, and none of the thymocytes previously treated with monoclonal antibody produced by hybrid cell line ATCC CRL 8014 and complement;

(d) reacts with Thy 3, Thy 4, and Thy 4–6 Common Thymocyte and Thy 8 Late Thymocyte T cell ALL stages, but not with Stage I or Thy 3–4 Common Thymocyte T cell ALL stages;

(e) reacts with CEM and MOLT-4 cell lines, but not with HSB-2 cell line; and

(f) defines a T cell population which is lower than normal levels in primary biliary cirrhosis and multiple sclerosis, absent to lower than normal levels in hyper IgE, higher than normal levels in acute graft versus host reaction, greatly above normal levels in acute infectious mononucleosis, completely absent in myasthenia gravis, and normal levels in all stages of Hodgkins disease and psoriasis.

5. Mouse monoclonal antibody which reacts with essentially all normal human suppressor T cells but with less than 2% of normal human bone marrow cells and not with normal human peripheral B cells or null cells.

6. A monoclonal antibody which reacts with essentially all normal human suppressor T cells but with less than 2% of normal human bone marrow cells and not with normal human peripheral B cells or null cells, prepared by the method which comprises the steps of:

(i) immunizing mice with normal human thymocytes;

(ii) removing the spleens from said mice and making a suspension of the spleen cells;

(iii) fusing said spleen cells with mouse myeloma cells in the presence of a fusion promoter;

(iv) diluting and culturing the fused cells in separate wells in a medium which will not support the unfused myeloma cells;

(v) evaluating the supernatant in each well containing a hybridoma for the presence of antibody to E rosette positive purified T cells or human thymocytes;

(vi) selecting and cloning a hybridoma producing antibody which reacts with essentially all normal human suppressor T cells but with less than 2% of normal human bone marrow cells and not with normal human peripheral B cells or null cells; and

(vii) recovering the antibody from the supernatant above said clones.

4,361,551

METHOD OF ENZYMATIC DEBRIDEMENT

William Galbraith, Newark, Del., assignor to Riker Laboratories, Inc., Northridge, Calif.

Continuation of Ser. No. 91,040, Nov. 5, 1979, abandoned. This application May 5, 1981, Ser. No. 260,711

Int. Cl.³ A61K *37/48*

U.S. Cl. 424—94 **2 Claims**

1. A method of treating devitalized mammalian skin tissue comprising the steps of:

a. applying to said tissue an effective amount of a composition comprising an enzyme mixture derived from crude bromelain by

i. suspending the crude bromelain in a solution of a weakly basic buffer having a pH of about 8 to 10.5 to selectively solubilize the active components;

ii. separating the undissolved solids from the solution; and

iii. removing a substantial portion of the small molecules having a molecular weight of about 10,000 or less from said solution;

in an inert solvent carrier containing at least sixty percent water;

b. allowing said composition to loosen said devitalized tissue and;

c. removing said devitalized tissue.

4,361,552

WOUND DRESSING

Paul S. Baur, Jr., League City, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Filed Sep. 26, 1980, Ser. No. 191,163

Int. Cl.³ A61K *35/48*

U.S. Cl. 424—105 **21 Claims**

1. A method of treating a wound or burn comprising the covering of said wound or burn with a dressing formed of amnion in which the proteins have been fixed by cross-linking.

12. A dressing for wounds, burns and surgically affected body members comprising amnion, the proteins of which have been cross-linked by fixing in a solution of a chemical cross-linking agent capable of cross-linking the proteins of said amnion.

4,361,553

THERAPEUTIC USES OF DYNORPHIN

Horace H. Loh, and Nancy M. Lee, both of San Francisco, Calif., assignors to Regents of the University of California, Berkeley, Calif.

Filed May 18, 1981, Ser. No. 264,830

Int. Cl.³ A61K *37/00*

U.S. Cl. 424—177 **11 Claims**

1. A therapeutic method of using dynorphin comprising:

administering a dynorphin dose, said dynorphin dose including a polypeptide having at least the sequence TYR-GLY-GLY-PHE-LEU-ARG-ARG-ILE-ARG-PRO, the TYR-GLY-GLY-PHE-LEU portion of said sequence defining an N-terminal end for said polypeptide, the administering being to a host tolerant to a narcotic analgesic.

4,361,554

ORGANIC INSECTICIDE

Tom R. Saunders, Wimberly, Tex., assignor to Texas Botanical Research, Company, Kerville, Tex.

Filed May 6, 1981, Ser. No. 261,002
Int. Cl.³ A01N *31/00, 65/00*
U.S. Cl. 424—180 1 Claim

1. A method of eradicating soft-bodied insects including said insects, insect larvae and insect eggs by contacting said insects with an insecticidally effective amount of aqueous solution consisting essentially of a mixture of cacti extract of opuntia cactus present in an amount of 8% to 12% and tannin present in an amount of 0.1% and 0.5% by weight of total solution, said solution being prepared by compressing a mulch of said cactus to produce an extract thereof, adding water to the extract, heating the extract and water to boiling temperature, cooling the heated extract and water and then adding the tannin to the cooled solution.

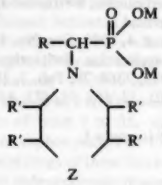
4,361,555

α-1,4-THIAZINE ALKANEPHOSPHONIC ACIDS

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 932,257, Aug. 9, 1978, Pat. No. 4,264,767. This application Oct. 2, 1980, Ser. No. 193,318
Int. Cl.³ A01N *57/16*
U.S. Cl. 424—200 8 Claims

1. A microbiocidal process which comprises treating a system with a microbiocidally effective amount of a compound of the formula



where R is a member of the group selected from the group consisting of alkyl, alkenyl, cycloaklyl, aryl, alkaryl, aralkyl and hydroxyphenyl, and R′ is hydrogen or alkyl, Z is S, SO or SO_2, and M is a hydrogen or a salt moiety.

4,361,556

METHOD FOR CONTROLLING INSECTS WITH SUBSTITUTED PHENYL PHOSPHOROTHIOATES

Walter Reifschneider, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 2, 1981, Ser. No. 307,961
Int. Cl.³ C07F *9/165;* A01N *57/14*
U.S. Cl. 424—216 9 Claims

1. A method for killing and controlling black cutworms which comprises contacting said cutworms or their habitat with a composition containing as an active ingredient an insecticidally effective amount of at least one of O,O-dimethyl O-[(4-tert-butylsulfinyl)-2-methoxyphenyl]phosphorothioate and O,O-dimethyl O-[(p-ter-amylsulfinyl)phenyl]phosphorothioate in intimate admixture with an inert carrier therefor.

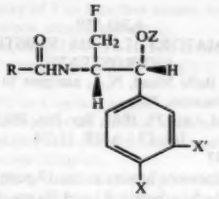
4,361,557

1-ARYL-2-ACYLAMIDO-3-FLUORO-1-PROPANOL ACYLATES, METHODS FOR THEIR USE AS ANTI-BACTERIAL AGENTS AND COMPOSITIONS USEFUL THEREFOR

Tattanhalli L. Nagabhushan, Parsippany, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 137,160, Apr. 4, 1980, Pat. No. 4,311,857, which is a continuation-in-part of Ser. No. 9,207, Feb. 5, 1979, Pat. No. 4,235,892. This application Aug. 10, 1981, Ser. No. 291,663
Claims priority, application South Africa, Jan. 28, 1980, 80/0478
Int. Cl.³ A61K *31/655, 31/165, 31/18;* C07C *117/00*
U.S. Cl. 424—226 14 Claims

1. A D-(threo)-1-aryl-2-acylamido-3-fluoro-1-propanol acylate of the following formula:



wherein

R is a member selected from the group consisting of methyl or ethyl or a halogenated derivative thereof, dihalogenodeuteriomethyl, 1-halogeno-1-deuterioethyl, 1,2-dihalogeno-1-deuterioethyl, azidomethyl and methylsulfonylmethyl; each of X and X′ is a member selected from the group consisting of NO_2, SO_2R_1, SOR_1, SR_1, $SONH_2$, SO_2NH_2, $SONHR_1$, SO_2NHR_1, COR_1, OR_1, R_1, CN, halogen, hydrogen, phenyl and phenyl substituted by halogen, NO_2, SO_2CH_3, R_1 or OR_1, wherein

R_1 is methyl, ethyl, n-propyl or isopropyl; and

Z is an acyl radical of a hydrocarboncarboxylic acid or an acyl radical of a hydrocarbondicarboxylic acid having up to 16 carbon atoms or an acyl radical of an aminohydrocarboncarboxylic acid having up to 12 carbon atoms; and the pharmaceutically acceptable salts of said acyl radicals.

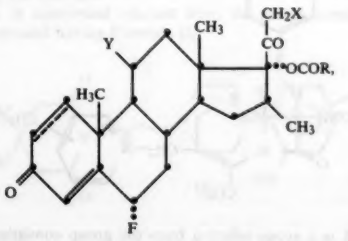
4,361,558

HALOGENATED STEROIDS

Peter Wieland, Oberwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 21, 1981, Ser. No. 256,205
Claims priority, application Switzerland, Apr. 29, 1980, 3303/80
Int. Cl.³ A61K *31/56*
U.S. Cl. 424—243 36 Claims

1. A halogenated steroid of the formula



in which

X represents a halogen atom having a maximum atomic number of 17,

Y represents a hydrogen atom or hydroxyl, and

R represents an alkyl radical having a maximum of 6 carbon atoms

and the dotted line in the 1,2-position represents the additional double bond of a 1,2-dehydro derivative.

13. Therapeutic method of alleviating or eliminating pathological inflammatory conditions in a warm-blooded animal, characterised by the administration to this warm-blooded animal of a compound according to claim **1** alone or in the form of a pharmaceutical preparation in quantities that are effective in the alleviation or elimination of the inflammation in this warm-blooded animal.

4,361,559

ANTIINFLAMMATORY 17,17-BIS (SUBSTITUTED THIO) ANDROSTENES

Ravi K. Varma, Belle Mead, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Aug. 20, 1981, Ser. No. 294,680
Int. Cl.³ A61K *31/56*
U.S. Cl. 424—243 **24 Claims**

1. A 3-ketoandrostene having in the 17-position the substituents R_1-S- and R_2-S- wherein R_1 and R_2 are different groups, and each is an alkyl, cycloalkyl or aryl group.

18. A method of treating topical inflammation in a mammalian host comprising topically administering an effective amount of a 3-ketoandrostene having in the 17-position the substituents R_1-S- and R_2-S- wherein R_1 and R_2 are the same or different and each is alkyl, cycloalkyl or aryl.

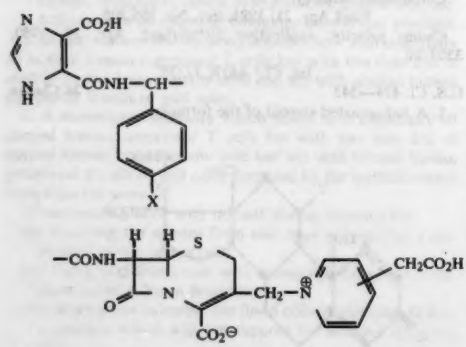
4,361,560

IMIDAZOLEDICARBOXYLIC ACID DERIVATIVE

Naohiko Yasuda, Yokosuka; Chikahiko Eguchi, Yokohama; Masaru Okutsu, Yamato, and Yoshiteru Hirose, Kamakura, all of Japan, assignors to Ajinomoto Company Incorporated, Tokyo, Japan

Division of Ser. No. 134,681, Mar. 27, 1980, Pat. No. 4,297,279. This application Sep. 16, 1980, Ser. No. 187,754
Claims priority, application Japan, Mar. 27, 1979, 54-36133
Int. Cl.³ C07D *501/38;* A61K *31/545*
U.S. Cl. 424—246 **6 Claims**

1. An imidazoledicarboxylic acid derivative having the following formula:



wherein X is a group selected from the group consisting of hydrogen atom and hydroxyl group.

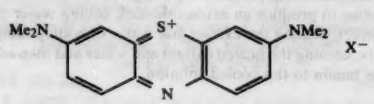
4,361,561

METHOD OF TREATMENT OF MANIC DEPRESSIVE ILLNESS

Graham J. Naylor, Lulgate, Lucklawhill, Balmullo, St. Andrews KY16 OBQ, Fife, Scotland, assignor to Graham John Naylor and Pamela Hilda Naylor, both of St. Andrews, Scotland

Filed Sep. 22, 1981, Ser. No. 304,665
Int. Cl.³ A61K *31/54*
U.S. Cl. 424—247 **4 Claims**

1. A method of treatment and/or prophylaxis of manic depressive illness comprising the administration of a therapeutically or prophylactically effective dosage of a compound of formula I



wherein X is a physiologically acceptable anion, or a bioprecursor thereof, to a patient suffering from manic depressive illness.

2. A method according to claim **1** wherein X is a halide anion.

3. A method according to claim **2** wherein the compound is methylthionine chloride.

4. A method according to claim **3** wherein methylthionine chloride is administered at a dosage rate of from 0.1 to 10 mg per kg bodyweight of the patient per day.

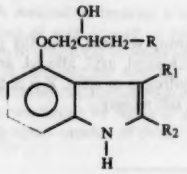
4,361,562

3-AMINOPROPOXYARYL DERIVATIVES, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Richard Berthold, Bottmingen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Aug. 4, 1980, Ser. No. 175,260
Claims priority, application Switzerland, Aug. 10, 1979, 7366/79; Aug. 10, 1979, 7368/79; Feb. 7, 1980, 987/80
Int. Cl.³ C07D *31/405, 31/445, 31/495;* A61K *403/12, 401/12*
U.S. Cl. 424—250 **29 Claims**

1. A compound of formula I,



I

wherein

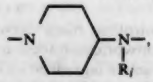
R_1 is hydrogen or methyl,

R_2 is cyano and

R is:

(a) a group —B—CO—R_A, wherein

B is a group (i), (ii) or (iii), groups (i), (ii) and (iii) having the following significances: (i)

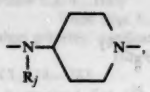


wherein

R_i is hydrogen, alkyl of 1 to 4 carbon atoms, phenyl or phenyl monosubstituted or independently disubstituted by

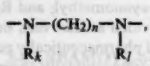
alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or halogen of atomic number of from 9 to 35;

(ii)



wherein R_j is hydrogen or alkyl of 1 to 4 carbon atoms;

(iii)



wherein

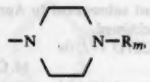
n is 2, 3 or 4,

R_k is hydrogen or alkyl of 1 to 4 carbon atoms and

R_l has the significance indicated above for R_k, and

R_h is phenylalkyl of 7 to 11 carbon atoms or diphenylalkyl of 13 to 17 carbon atoms, any of the phenyl rings of these two groups optionally being mono- or independently disubstituted by alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or halogen of atomic number of from 9 to 35;

(b) a group



wherein

R_m is —COR_n or —R_p, wherein

R_n has the significance indicated above for R_h and

R_p is phenyl monosubstituted by alkoxy of 1 to 4 carbon atoms or halogen of atomic number of from 9 to 35, phenyl independently disubstituted by alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or halogen of atomic number of from 9 to 35, phenylalkyl of 7 to 11 carbon atoms or diphenylalkyl of 13 to 17 carbon atoms, any of the phenyl rings of these last two groups optionally being mono- or independently disubstituted by alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or halogen of atomic number of from 9 to 35,

and physiologically acceptable hydrolyzable derivatives thereof having the hydroxy group in the 2 position of the 3-aminopropoxy side chain in esterified form, or a pharmaceutically acceptable salt thereof.

4,361,563
PYRIDAZINONE-SUBSTITUTED BENZIMIDAZOLES AND SALTS

Volkhard Austel, Biberach; Joachim Heider, Warthausen; Wolfgang Eberlein, Biberach; Willi Diederen, Biberach, and Walter Haarmann, Biberach, all of Fed. Rep. of Germany, assignors to Dr. Karl Thomae Gesellschaft mit Beschränkter Haftung, Biberach an der Riss, Fed. Rep. of Germany

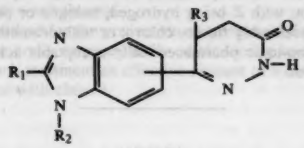
Continuation-in-part of Ser. No. 65,605, Aug. 10, 1979, abandoned. This application May 1, 1981, Ser. No. 259,537

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1978, 2837161; Jun. 1, 1979, 2922336

Int. Cl.[3] **C07D** *403/04, 237/04, 235/18;* **A61K** *31/50*

U.S. Cl. 424—250 **10 Claims**

1. A compound of the formula



wherein

R_1 is hydrogen; trifluoromethyl; alkyl of 1 to 11 carbon atoms; cycloalkyl of 3 to 7 carbon atoms; hydroxyl; alkoxy of 1 to 6 carbon atoms; mercapto; (alkyl of 1 to 6 carbon atoms)-mercapto; phenyl(alkyl of 1 to 3 carbon atoms); phenyl; or mono-, di- or trisubstituted phenyl, where the substituents, which may be identical to or different from each other, are each halogen, alkyl of 1 to 4 carbon atoms, (alkyl of 1 to 6 carbon atoms)sulfinyl, hydroxyl, alkoxy of 1 to 6 carbon atoms, mercapto or (alkyl of 1 to 6 carbon atoms)-mercapto;

R_2 is hydrogen, alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms or phenyl-(alkyl of 1 to 3 carbon atoms); and

R_3 is alkyl of 1 to 6 carbon atoms;

an optically active antipode thereof; or a non-toxic, pharmaceutically acceptable acid addition salt of said compound or of said optically active antipode.

9. A cardiotonic or antithrombotic pharmaceutical composition consisting essentially of an inert pharmaceutical carrier and an effective cardiotonic or antithrombotic amount of a compound of claim 1.

4,361,564
RENOPROTECTIVE TREATMENTS EMPLOYING VASODILATOR COMPOUNDS

K. David G. Edwards, 427 Washington St., New York, N.Y. 10013

Continuation-in-part of Ser. No. 965,059, Nov. 30, 1978, Pat. No. 4,250,191. This application Feb. 9, 1981, Ser. No. 232,650

Int. Cl.[3] **A61K** *31/415, 31/495, 31/505*

U.S. Cl. 424—250 **6 Claims**

1. A method of treating renal damage or failure in a host in need of treatment comprising administering to said host an effective amount for treating renal damage or failure; a vasodilator having postsynaptic alpha-adrenoceptor blocking activity and having antihyperlipidemic characteristics which lower the lipid levels in the bloodstream of the host, the vasodilator being selected from a group consisting of hydralazine hydrochloride and prazosin hydrochloride.

4,361,565
2-[4-[(4,4-DIALKYL-2,6-PIPERIDINEDION-1-yl)BUTYL]-1-PIPERAZINYL]PYRIDINES

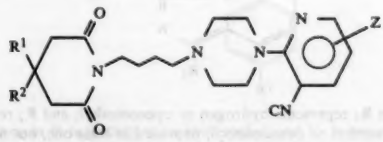
Davis L. Temple, Jr., Evansville; Joseph P. Yevich, Newburgh, and Walter G. Lobeck, Jr., Evansville, all of Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed Dec. 28, 1981, Ser. No. 334,689

Int. Cl.[3] **C07D** *401/14;* **A61K** *31/445, 31/495*

U.S. Cl. 424—250 **7 Claims**

1. A compound selected from the group consisting of a compound having Formula (I)



(I)

wherein

R^1 and R^2 are independently selected from C_1 to C_4 alkyl groups; with Z being hydrogen; halogen or pseudohalogen, preferably fluoro, chloro, or trifluoromethyl

and the non-toxic pharmaceutically acceptable acid addition salts thereof.

4,361,566

TETRAHYDRO β-CARBOLINES HAVING ANTIHYPERTENSIVE ACTIVITY

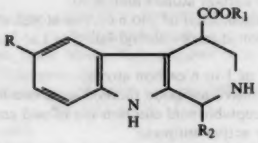
John W. Van Dyke, Jr., and Elva Kurchacova, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 176,407, Aug. 8, 1980, Pat. No. 4,291,039. This application Apr. 20, 1981, Ser. No. 255,544

Int. Cl.³ C07D *487/14;* A61K *31/44*

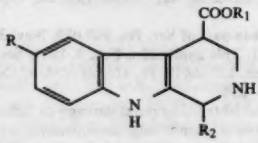
U.S. Cl. 424—256 **14 Claims**

1. Tetrahydro β-carbolines of the formula:



wherein R is OCH_3 or F; R_1 is H or CH_3 and R_2 is H.

8. A method of treating hypertension in an individual for whom such therapy is indicated which method comprises administering to such individual an antihypertensively effective amount of a compound characterized by the formula:



wherein R is OCH_3 or F; R_1 is H or CH_3 and R_2 is H.

4,361,567

TREATMENT OF PEPTIC ULCER DISEASE

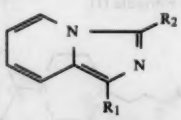
James A. Bristol, Ann Arbor, Mich., and Raymond G. Lovey, West Caldwell, N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Oct. 5, 1981, Ser. No. 308,348

Int. Cl.³ A61K *31/44;* C07D *487/04*

U.S. Cl. 424—256 **10 Claims**

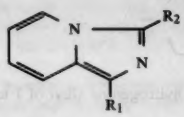
1. A compound represented by the formula



wherein R_1 represents hydrogen or cyanomethyl; and R_2 represents methyl or cyanomethyl, provided at least one, but not both R_1 and R_2 are cyanomethyl;

and pharmaceutically acceptale salts thereof.

4. A pharmaceutical composition for the treatment of peptic ulcer disease comprising an effective antisecretory and cytoprotective amount of, as the active ingredient, a compound represented by the formula



wherein R_1 represents hydrogen or cyanomethyl; and R_2 represents methyl or cyanomethyl, provided at least one, but not both R_1 and R_2 are cyanomethyl; and pharmaceutically acceptable salts thereof, together with a pharmaceutically acceptable carrier.

4,361,568

5-(PYRIDINYL)-1H-PYRAZOLO[3,4-B]PYRIDIN-3-AMINES AND THEIR CARDIOTONIC USE

George Y. Lesher, Schodack, and Monte D. Gruett, Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

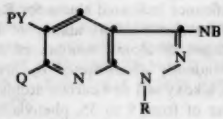
Filed Apr. 28, 1981, Ser. No. 258,363

The portion of the term of this patent subsequent to Apr. 28, 1998, has been disclaimed.

Int. Cl.³ A61K *31/44;* C07D *471/04*

U.S. Cl. 424—263 **14 Claims**

1. A 1-R-3-(NB)-5-PY-6-Q-1H-pyrazolo[3,4-b]pyridine having the formula



I

where R is lower-alkyl, lower-hydroxyalkyl, lower-acyloxy-(lower-alkyl) or lower-alkoxyalkyl, Q is hydrogen or lower-alkyl, PY is 4- or 3-pyridinyl or 4- or 3-pyridinyl having one or two lower-alkyl substituents, and NB is selected from NHR_1, NR_1R_2, or NHAc where R_1 and R_2 are each lower-alkyl and Ac is lower-acyl, or pharmaceutically-acceptable acid-addition salts thereof.

4,361,569

3-(HYDROXY OR HYDROXYMETHYL)-6-METHYL-5-(4-PYRIDINYL)-2(1H)-PYRIDINONE AND CARDIOTONIC USE THEREOF

George Y. Lesher, Schodack, and Richard E. Philion, Sand Lake, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Aug. 26, 1981, Ser. No. 296,291

Int. Cl.³ A61K *31/44;* C07D *213/69*

U.S. Cl. 424—263 **7 Claims**

1. 3-(Hydroxy or hydroxymethyl)-6-methyl-5-(4-pyridinyl)-2(1H)-pyridinone or pharmaceutically acceptable acid-addition salt thereof.

4,361,570

USE OF PYRIDOXINE α-KETOGLUTARATE IN THE PROPHYLAXIS OF HYPERLACTICACIDAEMIA

Francesco Fici, Milan, Italy, assignor to Istituto Luso Farmaco D'Italia S.p.A., Italy

Filed Sep. 8, 1981, Ser. No. 300,202
Claims priority, application Italy, Sep. 22, 1980, 24827 A/80
Int. Cl.³ A61Y *31/44*
U.S. Cl. 424—263 9 Claims

1. A method for the treatment of hyperlacticacidaemia which comprises administering to an animal or human requiring such treatment an anti-hyperlacticacidaemia effective amount of pyroxidine α-ketoglutarate.

4,361,571

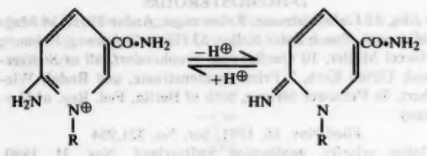
3-CARBAMOYL-6-AMINOPYRIDINIUM AND ANALOGUES, AND THEIR USE IN TREATING SKIN DISORDERS

Eugene J. Van Scott, 1138 Sewell La., Rydal, Pa. 19046, and Ruey J. Yu, 4 Lindenwold Ave., Ambler, Pa. 19002

Filed Jan. 21, 1981, Ser. No. 226,841
Int. Cl.³ C07D *211/98;* A61K *31/455*
U.S. Cl. 424—266 33 Claims

1. A 6-aminonicotinamide pyridinium compound effective on topical or systemic administration to alleviate the symptoms of skin disorders due to inflammation and disturbed keratinization comprising:

a compound having the formula:



wherein:

O•=O or S

R=a lower alkyl, carbamoyl lower alkyl, phenyl, phenyl lower alkyl or carboxy lower alkyl group

or its intermolecular salt with a therapeutically or pharmaceutically acceptable organic or inorganic acid anion, or its intramolecular salt with a carboxylic acid anion.

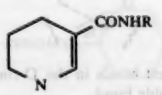
4,361,572

TETRAHYDRONICOTINAMIDE DERIVATIVE, PHARMACEUTICAL COMPOSITIONS AND USE

Sakae Takaku, Ageo; Fumiaki Matsuura, Tokyo; Takashi Mori, Ohizumigakuenmachi; Yasushi Murakami, Tokyo; Shigeyuki Kataoka, Sakado; Yasuhisa Takeda, Ichikawa; Yasuhiro Yamashita, Togoshi; Yumiko Takeda, Ichikawa; Takashi Matsuno, Ohmiya; Koji Mizuno, Kawagoe; Shinichi Kaiho, Chiba; Tamotsu Yamazaki, Tokorozawa; Shun-ichi Hata, Yokohama, and Shigeru Takanashi, Asaka, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1981, Ser. No. 332,856
Int. Cl.³ A61K *31/455;* C07D *211/78*
U.S. Cl. 424—266 23 Claims

1. A 1,4,5,6-tetrahydronicotinamide derivative of the formula:



(wherein R is a phenyl or pyridyl group which may have one or more alkyl groups containing 1–4 carbon atoms, alkoxy groups containing 1–4 carbon atoms or halogen atoms as substituents) or a salt thereof.

21. A method for the prevention or treatment of thrombosis comprising orally or parenterally administering to a patient in need of such treatment an effective amount of a compound in accordance with claim 1.

4,361,573

α,α-DIARYL-β-(TERT-AMINO)-PROPANOLS AND DIURETIC PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Wilhelm A. Behrendt, Niederweimar, and Bernhard Stieh, Marburg, both of Fed. Rep. of Germany, assignors to Temmler AG, Basel, Switzerland

Continuation of Ser. No. 119,490, Feb. 7, 1980, abandoned, which is a continuation of Ser. No. 15,629, Feb. 27, 1979, abandoned, which is a continuation of Ser. No. 762,484, Jan. 26, 1977, abandoned, which is a continuation of Ser. No. 554,902, Mar. 3, 1975, Pat. No. 4,025,633. This application Mar. 11, 1981, Ser. No. 242,703
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1974, 2410284; Feb. 26, 1975, 2508203
Int. Cl.³ A61K *31/445, 31/40;* C07D *295/08;* A61K *31/135*
U.S. Cl. 424—267 34 Claims

18. A diuretic composition wherein the active ingredient is an effective diuretic amount of 1-(4'-methoxy-2'-methyl-5'-isopropylphenyl)-1-phenyl-2-piperidino-propan-1-ol, together with a pharmaceutically acceptable diluent or carrier.

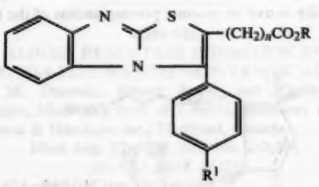
4,361,574

INHIBITORS OF MAMMALIAN COLLAGENASE

Norman H. Grant, Wynnewood, and Donald E. Clark, Norristown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Oct. 2, 1981, Ser. No. 307,710
Int. Cl.³ A61K *31/425*
U.S. Cl. 424—270 7 Claims

1. A method of inhibiting mammalian collagenase in mammals afflicted with a disease state in which collagen is broken down by collagenase, which comprises administering to such an afflicted mammal an amount sufficient to reverse said collagenase-induced collagen break down of a collagenase inhibitor having the formula:



wherein R is hydrogen or lower alkyl and R_1 is lower alkyl, lower alkoxy, trifluoromethyl or halo, n is 1 or 2 and pharmaceutically acceptable salts thereof.

4,361,575
SUBSTITUTED 2-PHENYLAMINO-2-IMIDAZOLINES AND SALTS THEREOF

Helmut Stähle; Herbert Köppe; Werner Kummer, all of Ingelheim am Rhein, Fed. Rep. of Germany; Walter Kobinger, Vienna, Austria; Christian Lillie, Vienna, Austria; Ludwig Pichler, Vienna, Austria; Wolfgang Hoefke, Wiesbaden, Fed. Rep. of Germany, and Wolfram Gaida, Ingelheim am Rhein, Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 208,519, Nov. 20, 1980, abandoned. This application Jun. 23, 1981, Ser. No. 276,703

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1979, 2947563

Int. Cl.³ C07D *233/06;* **A61K** *31/415*

U.S. Cl. 424—273 R **3 Claims**

1. 1-Ethyl-2-[N-(n-propyl)-N-(2,6-dichloro-phenyl)amino]-2-imidazoline or a non-toxic, pharmacologically acceptable acid addition salt thereof.

4,361,576
CYCLOBUTANEDICARBOXYLIC ACID IMIDES, AND COMPOSITIONS FOR THEIR USE AS PHYTOPATHOGENIC FUNGICIDES

Niklaus Bühler, Rheinfelden; Marcus Baumann, Basel; Daniel Bellus, Riehen, and Elmar Sturm, Aesch, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 141,746, Apr. 18, 1980, abandoned. This application Oct. 29, 1980, Ser. No. 201,950

Claims priority, application Switzerland, Apr. 20, 1979, 3748/79-5; Mar. 31, 1980, 2539/80-7

Int. Cl.³ A01N *37/32;* **C07D** *209/02*

U.S. Cl. 424—274 **4 Claims**

1. 1,2-Dimethyl-3-fluoro-cyclobutan-1,2-dicarbonic acid-(3,5-dichlorophenyl)-imide.

2. 1,2-Dimethyl-3,3-difluoro-cyclobutane-1,2-dicarbonic acid-(3,5-dichlorophenyl)-imide.

3. 1-Methyl-3,3-difluoro-cyclobutane-1,2-dicarbonic acid-(3,5-dichlorophenyl)-imide.

4. A composition for protecting plants against phytopathogenic fungi which comprises a fungicidally effective amount of a compound according to claims 1, 2 or 3, together with a suitable carrier.

4,361,577
ω-NOR-CYCLOALKYL-13,14-DEHYDRO-PROSTAGLANDINS AND PROCESS FOR THEIR PREPARATION

Carmelo Gandolfi; Renato Pellegata; Roberto Ceserani, and Maria M. Usardi, all of Milan, Italy, assignors to Carlo Erba - S.p.A., Milan, Italy

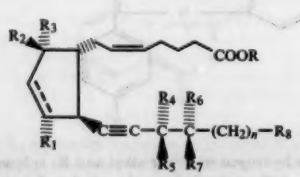
Continuation of Ser. No. 835,288, Sep. 21, 1977, abandoned, which is a continuation of Ser. No. 734,629, Oct. 21, 1976, abandoned, which is a division of Ser. No. 603,015, Aug. 8, 1975, Pat. No. 4,035,415. This application Feb. 2, 1979, Ser. No. 9,091

Claims priority, application Italy, Sep. 25, 1974, 27654 A/74

Int. Cl.³ C07C *177/00*

U.S. Cl. 424—285 **8 Claims**

1. Optically active or racemic prostaglandins of the formula



wherein:

R is a hydrogen atom, a C_1–C_{12} alkyl group or a cation of a pharmaceutically acceptable base;

R_2 and R_3, taken together, form an oxo group;

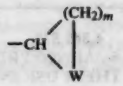
the symbol ⁼⁼⁼⁼ represents a single or a double bond, wherein, when the symbol ⁼⁼⁼⁼ is a double bond, R_1 is a hydrogen atom and when the symbol ⁼⁼⁼⁼ is a single bond, R_1 is hydroxy;

one of R_4 and R_5 is hydroxy and the other is hydrogen;

R_6 and R_7 are independently hydrogen or C_1–C_4 alkyl;

n is zero, 1, 2 or 3; and

R_8 is a radical



wherein m is 1, 2, 3, 4 or 5 and W is —CH_2—, or R_8 is tetrahydrofuryl; 1-adamantyl; 2-nor-bornyl; 2-bicyclo[2,2,2]octyl; or 4-t.butyl-cyclohexyl.

4,361,578
D-HOMOSTEROIDS

Leo Alig, 32 Liebrütistrasse, Kaiseraugst; Andor Fürst, 14 Magnolienpark, Basel; Peter Keller, 53 Hinterlindenweg, Reinach; Marcel Müller, 10 Quellenweg, Frenkendorf, all of Switzerland; Ulrich Kerb, 7 Prinzregentenstrasse, and Rudolf Wiechert, 8a Petzower Strasse, both of Berlin, Fed. Rep. of Germany

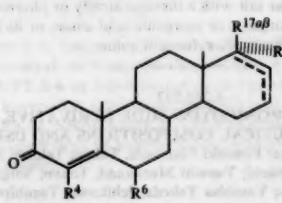
Filed Nov. 16, 1981, Ser. No. 321,954

Claims priority, application Switzerland, Nov. 21, 1980, 8622/80

Int. Cl.³ A61K *31/34;* **C07D** *307/94*

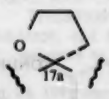
U.S. Cl. 424—285 **34 Claims**

1. D-homosteroids of the formula



1

wherein R^4 is hydrogen, methyl, chlorine or hydroxy; R^6 is hydrogen or methylene; $R^{17a\alpha}$ is hydrogen, methyl or chlorine and $R^{17a\beta}$ is carboxy, esterified carboxy, cyano, formyl, carbamoyl, mono(lower alkyl)carbamoyl or di(lower alkyl)carbamoyl; or $R^{17a\alpha}$ and $R^{17a\beta}$ together are a spiroether ring of the formula



and wherein the dotted bonds in the D-ring are an optional 16(17)- or 17(17a)-double bond.

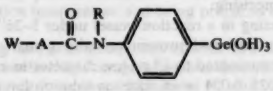
32. A method for the treatment of acne and hirsutism which comprises administering to an organism suffering therefrom an effective amount of a D-homosteroid of claim 1.

4,361,579
ORGANOGERMANIUM COMPOUNDS

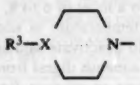
Tomohiko Munakata, Nakatsu; Chiaki Tashiro, Yoshitomi, and Yutaka Maruyama, Nakatsu, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

Filed Sep. 19, 1980, Ser. No. 188,787
Claims priority, application Japan, Sep. 19, 1979, 54-121027; Jan. 11, 1980, 55-2461
Int. Cl.³ C07F *7/30;* A01N *9/00;* A61K *31/28;* A61L *13/00*
U.S. Cl. 424—287 12 Claims

1. A polycondensation product of a germanium trihydroxide compound of the formula:

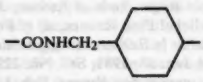


wherein W is hydrogen, alkyl, halogen, alkoxycarbonyl, carboxy, aryl, cycloalkyl which may be substituted, cycloalkenyl, heteroaryl or a group of the formula: $(R^1)(R^2)N-$ wherein R^1 and R^2 are each lower alkyl or R^1 and R^2 together with the adjacent nitrogen atom form a group of the formula:



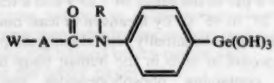
wherein R^3 is hydrogen, lower alkyl, phenyl which may be substituted, aralkyl, acyl, acylamino or heteroaryl, X is —N═, —CH═ or

A is a bond, alkylene, alkenylene, —CO—Y—, —CONH—Y—, —O—Y—, —S—Y— or

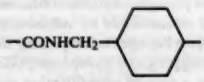


where Y is alkylene; and R is alkyl.

12. A method for producing a polycondensation product of a germanium trihydroxide compound of the formula:



wherein W is hydrogen, alkyl, halogen, alkoxycarbonyl, aryl, cycloalkyl which may be substituted, cycloalkenyl or heteroaryl, A is a bond, alkylene, alkenylene, —CO—Y, —CONH—Y—, —O—Y—, —S—Y— or



and R is alkyl, which comprises reacting a compound of the formula:

wherein R is as defined above, with a functional derivative of a carboxylic acid of the formula:

W—A—COOH

wherein A and W are as defined above.

4,361,580
ALUMINUM IBUPROFEN PHARMACEUTICAL SUSPENSIONS

Susanne M. Peck; Lois J. Larion, and Englebert L. Rowe, all of Kalamazoo, Mich., assignors to The Upjohn Manufacturing Company, Arecibo, P.R.

Continuation-in-part of Ser. No. 161,599, Jun. 20, 1980, abandoned. This application May 11, 1981, Ser. No. 259,232
Int. Cl.³ A61K *47/00, 31/28*
U.S. Cl. 424—287 15 Claims

1. A pharmaceutical liquid suspension composition consisting essentially of, for each 100 ml of suspension,

(a) from about 4 to about 17 gms of an aluminum salt of ibuprofen,

(b) from about 0.2 to about 1.1 gms of a pharmaceutically acceptable suspending agent having an average particle size below about 50 microns,

(c) from about 0.3 to about 0.7 gms of a non-toxic pharmaceutically acceptable essentially water soluble surface active agent, and

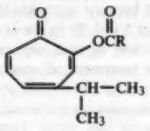
(d) sufficient water to bring the liquid volume to 100 ml of total liquid suspension.

4,361,581
SKIN-BEAUTIFYING COSMETIC COMPOSITION

Yasuaki Fukuda, 529, Kiyomizu, Okuradani, Akashi-shi, Japan, assignor to Yasuaki Fukuda, Akashi and Yakurigaku Chuo Kenkyusho, Tokyo, both of, Japan

Filed Dec. 29, 1980, Ser. No. 221,007
Int. Cl.³ A61K *7/40;* C07C *69/02, 69/22*
U.S. Cl. 424—312 6 Claims

1. A fatty acid ester of 4-isopropyltropolone represented by the formula:



(wherein R is a hydrocarbon group having 1 to 18 carbon atoms).

4,361,582
ALDOSE REDUCTASE INHIBITION BY γ-OXO-8-FLUORANTHENEBUTANOIC ACID

Dushan M. Dvornik, Mount Royal, and Nicole Simard-Duquesne, Montreal, both of Canada, assignors to Ayerst, McKenna & Harrison Inc., Montreal, Canada

Filed Aug. 17, 1981, Ser. No. 293,586
Int. Cl.³ A61K *31/19*
U.S. Cl. 424—317 4 Claims

1. A method of preventing or relieving a diabetic complication in a diabetic mammal which comprises administering to said mammal an effective alleviating or prophylactic amount

of γ-oxo-8-fluoranthenebutanoic acid, or a therapeutically acceptable salt thereof with an organic or inorganic base.

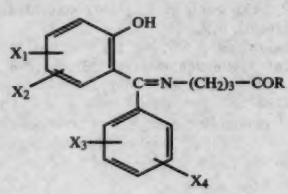
4,361,583

ANALGESIC AGENT

Jean P. Kaplan, Chevilly Larue, France, assignor to Synthelabo, Paris, France

Filed Aug. 19, 1980, Ser. No. 179,458
Int. Cl.³ A61U *31/165, 31/195*
U.S. Cl. 424—319 4 Claims

1. A method of treating pain which comprises administering to a patient suffering from pain an effective dosage of a compound (I) to relieve said pain, said compound (I) having the formula



(I)

wherein

X_1, X_2, X_3 and X_4 are each, independently, hydrogen, halogen, NO_2, CH_3O, CH_3 or CF_3 and

R is OH, ONa or NH_2.

4,361,584

COMPOSITION AND METHOD FOR THE TREATMENT OF ACNE

James E. Fulton, Jr., Key Biscayne, Fla., assignor to A.H.C. Pharmacal, Inc., Miami, Fla.

Continuation of Ser. No. 840,339, Oct. 7, 1977, Pat. No. 4,189,501. This application Dec. 17, 1979, Ser. No. 104,630
The portion of the term of this patent subsequent to Feb. 19, 1997, has been disclaimed.
Int. Cl.³ A61K *31/075*
U.S. Cl. 424—338 3 Claims

1. A composition, comprising a dispersion of about 1 wt. % to about 30 wt. % of benzoyl peroxide in an aqueous solution containing from about 5 vol. % to about 50 vol. % of glycerol to inhibit decomposition of said peroxide, said composition being effective in the treatment of acne.

4,361,585

METHOD OF TREATMENT TO RELIEVE PAIN IN MUSCLES OR BONES

Roy Edwards, 1415 Highland Dr., Solana Beach, Calif. 92075

Continuation-in-part of Ser. No. 193,147, Oct. 2, 1980, abandoned, which is a continuation-in-part of Ser. No. 35,604, May 3, 1979, Pat. No. 4,239,781, which is a continuation of Ser. No. 876,203, Feb. 9, 1978, abandoned. This application Apr. 29, 1981, Ser. No. 258,662
Int. Cl.³ A61K *31/08*
U.S. Cl. 424—342 9 Claims

1. A method of treatment to relieve pain from muscles or bone ailments comprising topically wetting the pained area with an effective amount of a fluid composition consisting essentially of polyalkylene glycol as the sole active ingredient until relief of pain is experienced.

4,361,586

VACUUM ENZYMATIC DIGESTION OF PROTEIN MATERIAL

Wilmon W. Meinke, 306 Crescent Dr., Bryan, Tex. 77801

Continuation-in-part of Ser. No. 206,050, Nov. 12, 1980, abandoned, which is a continuation of Ser. No. 106,311, Dec. 21, 1979, abandoned, which is a continuation-in-part of Ser. No. 11,710, Feb. 12, 1979, abandoned. This application Sep. 9, 1981, Ser. No. 300,653
Int. Cl.³ A23J *1/04;* A23L *1/325*
U.S. Cl. 426—7 7 Claims

1. A process for enzymatic hydrolysis of animal or vegetable protein containing matter to produce a protein concentrate product comprising:

(a) contacting in a reaction vessel under 5–26" Hg vacuum enzymes and said protein containing matter which has been comminuted to ¼" or less diameter in a weight ratio of 0.00025–0.004 in an aqueous solution having a pH and temperature adjusted to achieve enzymatic hydrolysis of said protein containing matter to produce an aqueous protein rich digest product, undigested residue solids product and a vapor stream;

(b) removing said vapor stream from said reaction vessel;

(c) adjusting pH of the remaining mixture of aqueous digest product and undigested residue solids product in said reaction vessel to a level of 6 to 8;

(d) elevating said temperature in said reaction vessel to a level necessary to deactivate said enzymes; and

(e) separating said aqueous digest from said undigested residue solids to obtain an aqueous digest stream.

4,361,587

PHOSPHOPEPTIDES FROM CASEIN-BASED MATERIAL

Gerard Brule; Loïc Roger, both of Rennes; Jacques Fauquant, Monfort, and Michel Piot, Rennes, all of France, assignors to Institut National de la Recherche Agronomique, Paris, France

Filed Jan. 28, 1981, Ser. No. 229,075
Claims priority, application France, Feb. 1, 1980, 80 02280
Int. Cl.³ A23C *23/00;* A23J *3/00;* C12D *21/06;* C07G *7/00*
U.S. Cl. 426—42 15 Claims

1. A method for producing phosphopeptides from a casein-based raw material containing phosphocaseinates of bivalent cations comprising subjecting the raw material to an enzymatic hydrolysis at a pH in the range of 7 to 9 and a temperature in the range of 37° to 45° C. by means of at least one proteolytic enzyme capable of substantially reproducing the proteic digestion which occurs in vivo in the human body to produce a hydrolysate containing phosphopeptides and non-phosphorylated peptides, recovering the resulting hydrolyzate, subjecting said hydrolyzate to at least one ultrafiltration step on membranes capable of retaining the phosphopeptides while letting the non-phosphorylated peptides pass therethrough to produce an ultrafiltration retentate containing phosphopeptides and the proteolytic enzyme, recovering the retentate, disaggregating the phosphopeptides contained in said retentate by acidifying said retentate, or by subjecting said retentate to the action of complexing agents, subjecting the resultant retentate containing disaggregated phosphopeptides and proteolytic enzyme to at least a second ultrafiltration step on membranes which do not retain the phosphopeptides but which retain the enzyme and recovering the phosphopeptides that pass through the membranes in said second ultrafiltration step.

4,361,588

FABRICATED FOOD PRODUCTS FROM TEXTURED PROTEIN PARTICLES

Jack L. Herz, Weston, Conn., assignor to Nutrisearch Company, Cincinnati, Ohio

Filed Jul. 30, 1980, Ser. No. 173,564
Int. Cl.³ A23J *3/02*; A23L *1/34*
U.S. Cl. 426—104 **19 Claims**

11. A process for preparing a shaped fabricated food product comprising (a) blending a major proportion of edible protein particles with a bonding agent, said bonding agent comprising a whey protein concentrate composition having 40–60% protein, said whey protein concentrate composition having a lowered gelation temperature and being prepared by a process comprising

(i) adjusting the pH of an aqueous solution of a whey protein concentrate having a temperature less than about 30° C. to a pH ranging from about 8 to about 10, said whey protein concentrate comprising a whey protein concentrate derived by ultrafiltration and having from about 40 to about 60 percent, by weight, on a dry basis of whey protein,

(ii) heating the pH adjusted solution of step (i) to a temperature ranging from about 50° C. to about 80° C., and

(iii) cooling said heated solution to a temperature below 30° C. and above 2° C. within at least 30 minutes after the said heated solution reaches its maximum temperature level, said cooling being conducted at a rate sufficient to prevent gelation of the whey protein containing solution, and

(b) forming said blend into a shaped fabricated food product.

4,361,589

INFUSED DRIED CELERY

Ronald P. Wauters, Dover, Del.; Ralph E. Kenyon, Belle Mead, N.Y.; Monoj K. Sarma; Larry L. Layton, both of Dover, Del.; Wade H. Swanson, Denair, and Diane E. Hibler, Ripon, both of Calif., assignors to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 192,266, Sep. 30, 1980, abandoned. This application Jun. 8, 1981, Ser. No. 271,450
Int. Cl.³ A23B *7/02*
U.S. Cl. 426—270 **24 Claims**

1. Process for preparing dried infused celery pieces with extended storage stability which upon rehydration possess the taste, color, texture and appearance of fresh celery:

soaking fresh celery pieces in a solution containing a sugar chosen from the group consisting of lactose, glucose, glucose syrup with a DE within the range of 30 to 60 and derivatives thereof, the solution being at a pH of 6.5 to 9 and maintained at a temperature within the range of 120° F. to less than 220° F. and at a soaking concentration and for a period of soaking time to infuse the celery pieces with a level of sugar solids within the range of 55 to 85% by dry weight effective to preserve the fresh or freshly cooked celery texture, color, appearance and taste in said celery pieces without an excessive sweet or bitter taste upon drying then rehydrating said infused celery pieces;

then draining the infused celery pieces; and

then drying the celery pieces

4,361,590

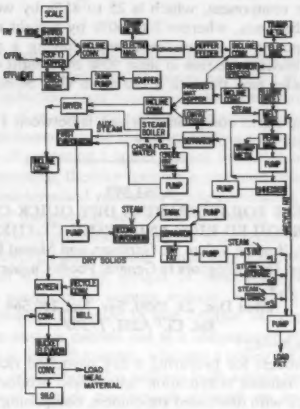
PROCESS FOR SEPARATING AND RECOVERING FAT AND PROTEINACEOUS MATERIAL FROM RAW ORGANIC MATERIAL

Herbert W. Wojcik, Palos Heights, Ill., assignor to Darling-Delaware Co., Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 112,204, Jan. 15, 1980, Pat. No. 4,232,425, which is a continuation-in-part of Ser. No. 966,078, Dec. 4, 1978, abandoned. This application Nov. 10, 1980, Ser. No. 205,781
Int. Cl.³ A23L *1/31*
U.S. Cl. 426—480 **12 Claims**

1. A continuous low energy rendering process for separating fat from proteinaceous material in raw organic material which contains fat, water and proteinaceous material to provide stabilized fat and stabilized protein products comprising;

(a) pressing said raw organic material in a press having a perforated wall section which permits passage therethrough of fat and soft low density proteinaceous material to mechanically strip from said raw organic material a major proportion of the fat and a large amount of the soft low density proteinaceous material from said raw organic material without subdividing said raw organic material to a size substantially smaller than required for feeding said raw organic material into said press and without applying heat to said raw organic material in order to liquify the fat therein and reduce significantly the moisture content of the raw organic material, and recovering said fat and said low density proteinaceous material along with small fragments of high density proteinaceous material in the form of a fatty aqueous fluid slurry while forming in said press



a raw stripped residue comprised mainly of pressed wet low-fat high density proteinaceous material;

(b) liquifying the fat in said slurry by applying heat to said slurry;

(c) separating from said slurry a major portion of the liquified fat along with extruded water containing dissolved proteinaceous solids as crude fatty material and leaving as a residue wet essentially low-fat soft low density proteinaceous material containing said small fragments;

(d) combining and drying said low-fat soft low density proteinaceous material from step (c) and said low-fat high density proteinaceous material from step (a) to form a stable low-fat protein meal material; and

(e) heating said crude fatty material to effect sterilization of said fat and said dissolved proteinaceous solids and separating fat from said water and proteinaceous solids to provide a clean stabilized fat product.

4,361,591

HIGH PROTEIN PASTA PRODUCT

Farook Taufiq, Pelham, N.H., assignor to The Prince Company, Inc., Lowell, Mass.

Filed Apr. 4, 1980, Ser. No. 137,382
Int. Cl.³ A21L *1/16*
U.S. Cl. 426—557 **4 Claims**

1. A pasta product formed of about 5% of a proteinaceous additive material consisting essentially of calcium caseinate and a partially denatured whey composition said additive comprising approximately equal portions of said composition and said caseinate in intimate intra-particle relationship having an average particle size of less than about 0.005 inch and further containing about 80% wheat flour; about 8% soy flour and about 7% wheat gluten.

4,361,592
DRY INSTANT PUDDING MIX

John R. Carpenter; Robert R. Cassanelli, and Frank J. Markert, all of Dover, Del., assignors to General Foods Corporation, White Plains, N.Y.

Filed Feb. 4, 1981, Ser. No. 231,194
Int. Cl.³ A23L *1/187, 1/195*
U.S. Cl. 426—579 5 Claims

1. An improved, dry, instant pudding mix, which rapidly and uniformly disperses and hydrates to produce a pudding with improved smoothness, creaminess and glossy appearance, wherein the improved composition comprises:

a pregelatinized starch component, which is 5 to 25% by weight of the pudding mix, and consists of individual whole granules wherein, a maximum of 1% by weight of the starch is retained on a 230 mesh U.S. Standard screen, and at least a majority by weight of the starch particles pass through a 400 mesh U.S. Standard screen;

a sugar component, which is 25 to 85% by weight of the pudding mix, wherein 5 to 60% by weight of the sugar component is a powdered sugar having a particle size distribution wherein at least 90% by weight of the sugar particles pass through a 200 mesh U.S. Standard screen; and

a setting agent component, which is between 1 and 5% by weight of the pudding mix.

4,361,593
PROCESS FOR PREPARING DRY QUICK-COOKING PARBOILED RICE AND PRODUCT THEREOF

Arthur W. Brooks; Vahan M. Garibian, and Monoj K. Sarma, all of Dover, Del., assignors to General Foods Corporation, White Plains, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,564
Int. Cl.³ A23L *1/182*
U.S. Cl. 426—627 17 Claims

1. A process for preparing a dry parboiled rice which requires a reduced rehydration time while producing a rehydrated rice with decreased starchiness, comprising: (a) soaking rough rice in water to increase the moisture content to 30 to 45% by weight thereby producing a hydrated rice but without effecting substantial gelatinization; (b) removing the rice from the steeping water and steaming the hydrated rice under conditions effective to partially gelatinize substantially all starch granules in the rice kernel but without fully gelatinizing said granules; (c) tempering the partially-gelatinized rice for a period of time, at a temperature below the gelatinization temperature of the starch while maintaining the level of moisture above 20%, said tempering being effective to reduce subsequent rupturing of the starch granules upon rehydration; (d) drying the rice to a moisture content of less than 15%; and (e) milling the rice.

4,361,594
PROCESS FOR ADVANCING ETHERIFIED AMINOPLAST RESINS WITH A GUANAMINE

Kenneth Winterbottom, Whittlesford, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 16, 1980, Ser. No. 187,699
Claims priority, application United Kingdom, Sep. 27, 1979, 7933501
Int. Cl.³ B05D *1/04*
U.S. Cl. 427—27 9 Claims

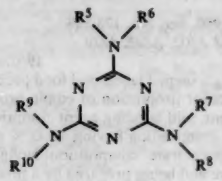
1. A process for the preparation of an advanced etherified aminoplast resin which comprises

reacting, at a pH of from 2.5 to 9 and at a temperature in the range 80° to 150° C.,

(a) an etherified N-methylolated urea, cyclic urea, carbamate, or melamine, having the formula I, II, or III

$$ROCH_2N(R^2)—R^1—N(R^3)CH_2OR \quad I$$

$$-[(ROCH_2)_mN(H)_p—COO]_5R^4 \quad II$$



III

where

R represents a hydrogen atom or an alkyl group of 1 to 6 carbon atoms, with the proviso that at least 50% of the symbols R in the groups $—CH_2OR$ in every compound of formula I, II, and III represent such alkyl groups,

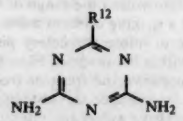
R^1 represents a carbonyl group, in which case R^2 and Rhu 3 (which may be the same or different) each represents a hydrogen atom or a group of formula $ROCH_2—$, or together they represent an alkylene chain of 2 to 4 carbon atoms which may be substituted by 1 or 2 hydroxyl groups and by 1 to 4 alkyl groups each of up to 5 carbon atoms, or R^1 represents a methylene or ethylene group, in which case R^2 and R^3 each represents a group of formula $—COOR^{11}$,

n either represents 1, in which case p represents zero, m represents 2, and R^4 represents an alkyl group of 1 to 18 carbon atoms which may be substituted by 1 or 2 hydroxyl groups or by an alkoxy group of from 1 to 5 carbon atoms, or n represents 2, in which case p represents zero and m represents 2, or p and m each represents 1, and R^4 represents an alkylene group of 1 to 6 carbon atoms or an arylene group of 6 to 12 carbon atoms,

R^5 to R^{10}, which may be the same or different, each represents a hydrogen atom or a group of formula $—CH_2OR$, with the proviso that not more than 4 of them represent hydrogen atoms, and

R^{11} represents an alkyl group of up to 18 carbon atoms which may be substituted by 1 or 2 hydroxyl groups or by an alkoxy group of from 1 to 5 carbon atoms, with

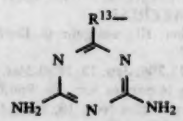
(b) a guanamine of formula



IV

where

R^{12} represents an alkyl or aralkyl group of from 1 to 18 carbon atoms, an aryl group of 6 to 8 carbon atoms, or a group of formula



V

and R^{13} represents an alkylene group of from 2 to 16 carbon atoms or a phenylene group,

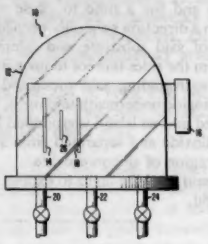
wherein 0.05 to 1 gram equivalent of guanamine residue of component (b) is used per mole of component (a).

4,361,595

METHOD FOR PREPARING AN ABRASIVE LAPPING DISC

Grzegorz Kaganowicz, Princeton, N.J., and John W. Robinson, Levittown, Pa., assignors to RCA Corporation, Princeton, N.J.

Filed Jan. 28, 1981, Ser. No. 229,150
Int. Cl.³ B05D 3/06
U.S. Cl. 427—39 16 Claims



1. A method for preparing a coating on a heat sensitive substrate comprising the steps of:

placing the substrate in a chamber having two spaced apart electrodes wherein the substrate is between, parallel to, and spaced apart from the two electrodes and wherein one major surface of the substrate is substantially covered by a separate covering article whose purpose is to substantially alleviate heat buildup on the substrate;

introducing the appropriate precursors into the evacuated chamber; and

subjecting the precursors to a glow discharge by means of the electrodes so as to deposit the desired coating on an uncovered surface of the substrate which is opposite the substantially covered major surface.

4,361,596

PROCESS FOR THE MANUFACTURE OF INDUSTRIAL RUBBER ARTICLES

Evgeny A. Dukhovskoi, prospekt Vernadskogo, 127, kv. 467; Alexandr M. Kleiman, naberezhnaya M. Gorkogo, 40/42, kv. 244, both of Moscow; Ardalion N. Ponomarev, Noginsky raion, p/o Chernogolovka, ulitsa Tretia, 2, kv. 3, Moskovskaya oblast; Askold A. Silin, prospekt Vernadskogo, 93, kv. 95, Moscow; Valentina M. Skok, prospekt Vernadskogo, 93, kv. 94, Moscow; Viktor L. Talroze, Vorobievskoe shosse, 11, kv. 21, Moscow, and Anatoly V. Khomyakov, ulitsa Studencheskaya, 30, stroenie 2, kv. 2, Moscow, all of U.S.S.R.

Filed Sep. 25, 1980, Ser. No. 190,803
Claims priority, application U.S.S.R., Sep. 25, 1979, 2810499
Int. Cl.³ B05D 3/14
U.S. Cl. 427—41 5 Claims

1. A process for manufacturing industrial rubber articles having a reduced coefficient of friction comprising:

treating an unvulcanized rubber preform by contacting its surface with a fluoroorganic compound selected from the group consisting of perfluorinated liquid, an emulsion of polytetrafluoroethylene, an ester of acrylic acid and a fluorinated alcohol, or an ester of methyacrylic acid and a fluorinated alcohol;

molding and vulcanizing said treated rubber preform to form an article;

placing said treated vulcanized rubber article into a sealed chamber at a pressure below 10 Pa and exposing said article therein to an electric glow discharge;

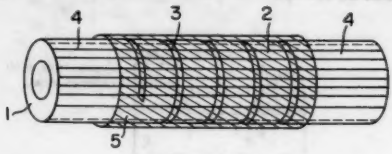
controlling the pressure in said chamber with said electric glow discharge and discontinuing the electric glow discharge upon reaching a residual pressure of below 100 Pa.

4,361,597

PROCESS FOR MAKING SENSOR FOR DETECTING FLUID FLOW VELOCITY OR FLOW AMOUNT

Hideo Arima, Yokohama; Mituko Ito, Yokosuka; Akira Ikegami, Yokohama; Sadayasu Ueno, Katsuta; Kanemasa Sato, Katsuta, and Yutaka Nishimura, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 27, 1981, Ser. No. 229,179
Claims priority, application Japan, Jan. 28, 1980, 55-7832
Int. Cl.³ H01C 7/04; B05D 3/06, 5/12
U.S. Cl. 427—53.1 15 Claims



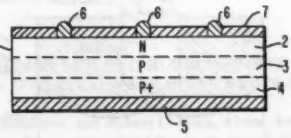
1. In a process for making a sensor for detecting a fluid flow velocity or flow amount, which comprises a step of applying an electroconductive paste containing platinum powder to the outer surface of an insulating tube, and firing the paste, thereby forming a platinum film on the outer surface of the insulating tube, a step of preparing a spiral groove on the platinum film by laser processing, thereby forming a platinum resistor band having a predetermined resistance while eliminating platinum remains from the groove, and a step of coating the platinum resistor band with amorphous glass, the improvement comprising said electroconductive paste containing platinum powder consisting of 65–85% by weight of platinum powder and 35–15% by weight of an organic vehicle, with said platinum powder uniformly dispersed in said organic vehicle, and the firing of the paste is carried out at a temperature of 1100° to 1400° C. for at least 20 minutes, whereby a sensor for detecting a fluid flow velocity or flow amount with a high precision of resistance and a high mechanical strength at low cost is formed.

4,361,598

POLYMERIZED SOLUTIONS FOR DEPOSITING OPTICAL OXIDE COATINGS

Bulent E. Yoldas, Churchill Borough, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 65,706, Aug. 10, 1979, abandoned, which is a continuation of Ser. No. 931,346, Aug. 8, 1978, abandoned. This application Oct. 24, 1980, Ser. No. 200,164
Int. Cl.³ C07F 7/28, 7/02, 9/00; B05D 1/18
U.S. Cl. 427—74 29 Claims



1. A clear stable solution which comprises:

(A) alkoxide having the general formula $M(OR)_n$ where M is selected from the group consisting of 0 to 100% Ti, 0 to 25% Si, 0 to 100% Ta, and up to 15% of a metal ion which forms an alkoxide, R is alkyl from C_1 to C_6, and n is the valence of M;

(B) about 1.7 to about 4 moles of water per mole of alkoxide;

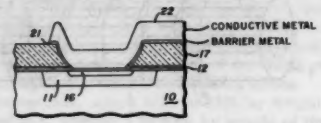
(C) sufficient alcohol to give a solids content of about 0.1 to about 15% by weight based on equivalent oxide; and

(D) a sufficient amount of a suitable acid to prevent cloudiness.

4,361,599
METHOD OF FORMING PLASMA ETCHED SEMICONDUCTOR CONTACTS

Robert L. Wourms, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 23, 1981, Ser. No. 246,527
Int. Cl.³ B05D *5/12*; **B44C** *1/22*; **C03C** *15/00, 25/06*
U.S. Cl. 427—90 **8 Claims**



1. A process for making metal contact to a silicon substrate wherein the desired contact diameter is of the same order as the thickness of an oxide layer that overlies and passivates said silicion substrate, said process comprising the steps:

forming a relatively thin oxide over said silicon;

forming openings in said thin oxide using a photolithographic mask in those areas where contact is desired;

forming a metal silicide in said silicon in said openings;

depositing an insulator over said substrate to a thickness on the same order as the diameter of said openings;

applying an etch resist over said insulator;

opening holes in said etch resist in said contact areas using a photolithographic mask having the same artwork as that in the mask used in forming said openings;

plasma etching said insulator through said holes in said resist;

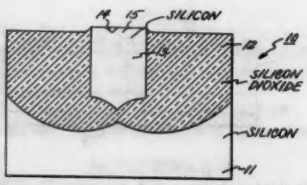
continuing said etching until all of said insulator is removed with said silicide halting said etching at said silicon surface; and

depositing a contact metal over said substrate to form an ohmic contact to said silicide.

4,361,600
METHOD OF MAKING INTEGRATED CIRCUITS

Dale M. Brown, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,255
Int. Cl.³ H01L *21/316, 21/76*
U.S. Cl. 427—93 **19 Claims**



1. A method of forming, in a substrate of monocrystalline silicon semiconductor material having a major surface, an island of silicon including an active region of said substrate adjacent said major surface and surrounded by a body of silicon dioxide separating said island from said substrate comprising:

providing said substrate of monocrystalline silicon semiconductor material having said major surface and including said active region of said substrate adjacent said major surface thereof,

providing an oxidation-resistant and etch-resistant masking layer overlying and in registry with said active region,

patterning said substrate using said masking layer to form a mesa the top of which is said active region,

forming a film of an oxidation-resistant material on the sides of said mesa,

heating said substrate in an oxidizing atmosphere to a temperature and for a time to cause silicon dioxide to be grown in a direction generally perpendicular to said major surface of said substrate and laterally underneath said mesa from the sides thereof to form a first region of silicon dioxide surrounding said mesa and a second region of silicon dioxide underneath said mesa, whereby said mesa is converted into an island surrounded by said first region of silicon dioxide and separated from said substrate by said second region of silicon dioxide,

removing said masking layer to expose said major surface of said island.

4,361,601
METHOD OF FORMING A PERMIONIC MEMBRANE

Patrick E. Hillman, and Preston S. White, both of Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

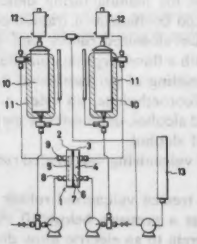
Filed Nov. 17, 1980, Ser. No. 207,592
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—123 **10 Claims**

1. In a method of preparing an electrolyte impermeable chlor-alkali cell permionic membrane comprised of a fluorocarbon copolymer having immobile cation selective groups on a fluorocarbon backbone, comprising depositing electroconductive materials chosen from the group consisting of particles of metals, particles of metal compounds, and mixtures thereof on a surface of the permionic membrane, the improvement comprising providing a composition of plasticizer chosen from the group consisting of phthalates, sebacates, adipates, and azelates, and the particles of the electroconductive material on the surface of the permionic membrane, and hot pressing the plasticizer, the particles of electroconductive material, and the permionic membrane, whereby to deposit the electroconductive material in the permionic membrane.

4,361,602
METHOD FOR PRODUCTION OF POSITIVE ELECTRODE FOR ELECTROLYSIS OF WATER

Eiichi Torikai, Yao; Youji Kawami, Kawachi-Nagano, and Noboru Wakabayashi, Ikeda, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Sep. 14, 1981, Ser. No. 302,133
Int. Cl.³ C23C *3/02*
U.S. Cl. 427—123 **4 Claims**



1. A method for the production of a positive electrode for the electrolysis of water, characterized by immersing a nickel electrode in an aqueous solution containing a nickel salt, a

rhodium salt, and an alkylamine borane and having the nickel salt and the rhodium salt in amounts such that the molar ratio of nickel to rhodium falls in the range of from 0.01 to 2.0.

4,361,603

ELECTRODE FOR ELECTROCHEMICAL PROCESSES AND PRODUCTION METHOD THEREFOR

Vladimir L. Kubasov, ulitsa Kirovogradskaya, 4, korpus 2, kv. 135; Leonid I. Jurkov, ulitsa Tashkentskaya, 22, korpus 1, kv. 124; Vladimir B. Busse-Machukas, Izmailovsky bulvar, 37, kv. 27; Georgy N. Kokhanov, ulitsa Melnikova, 23, kv. 29, and Florenty I. Lvovich, 1 Nizhne-Mikhailovsky proezd, 16, kv. 55, all of Moscow, U.S.S.R.

Division of Ser. No. 109,299, Jan. 3, 1980, Pat. No. 4,256,563. This application Aug. 29, 1980, Ser. No. 182,828

Int. Cl.³ B05D *5/12*

U.S. Cl. 427—126.5 **12 Claims**

1. A method of fabricating an electrode for electrochemical processes, involving deposition of an active coating consisting of a metal oxide from the platinum group, at least one iron group metal oxide selected from the group consisting of iron, manganese and cobalt, and boron oxide on an electrically conductive base, which comprises applying onto said electrically conductive base a solution of a thermally decomposed boric compound, at least one thermally decomposed metal compound selected from the group consisting of iron, manganese and cobalt, and at least one thermally decomposed metal compound from the platinum group, and subjecting said base having said solution thereon to thermal treatment at a temperature of 360° to 500° C.

4,361,604

FLAME SPRAY POWDER

Burton A. Kushner, Old Bethpage, and Michael J. Jirinec, New Hyde Park, both of N.Y., assignors to Eutectic Corporation, Flushing, N.Y.

Filed Nov. 20, 1981, Ser. No. 323,390

Int. Cl.³ B05D *1/10*

U.S. Cl. 427—423 **10 Claims**

1. A free-flowing self-bondable flame spray powder derived from an atomized alloy powder, said powder having particles characterized by aspherical shapes and having an average particle size within the range of about plus 400 mesh to minus 100 mesh,

said aspherically shaped powder being further characterized by a specific surface of about 180 cm^2/gr and higher,

said flame spray powder being formed of an alloy consisting essentially by weight of up to about 0.1% C, about 3% to 30% Mo, up to about 3% Si, up to about 6% W, about 2.5% to 12% Ti, about 10% to 22% Fe, up to about 0.4% V, and the balance essentially nickel.

4,361,605

APPARATUS USED IN SURFACE TREATMENT AND A METHOD OF SURFACE TREATMENT USING SAID APPARATUS

Yoshinobu Takahashi; Yasuo Tokushima; Kentarou Ogata, all of Toyota; Mamoru Suzuki, Aichi, and Zyouzi Ito, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed May 11, 1981, Ser. No. 262,429

Claims priority, application Japan, May 12, 1980, 55-063268

Int. Cl.³ C23F *7/08*

U.S. Cl. 427—424 **7 Claims**

1. An apparatus comprising:

a dipping tank having a first end, a second end and a bottom, said tank being adapted to be filled with a liquid;

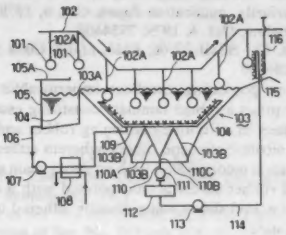
means for moving an article from said first end to said second end while said article is immersed in said liquid;

at least two hoppers comprising the entire bottom of said dipping tank;

first spray means adjacent said second end for spraying each said article as said article leaves said dipping tank;

first conduit means connected only between all of said hoppers and said first spray means;

filter means in said first conduit means whereby all of said



fluid is filtered between said hoppers and said first spray means; and

means for circulating liquid through said first conduit means whereby said liquid is circulated from said hoppers through said first circulating means to said first spray means.

4,361,606

METHOD FOR IRRADIATION OF POLYMERIC LAMINATES AND PRODUCT

John M. Butler, Centerville, Ohio, and Charles L. D. Chin, Avon, Conn., assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 30, 1980, Ser. No. 192,630

Int. Cl.³ B29C *27/02;* B29D *9/10*

U.S. Cl. 428—17 **15 Claims**

15. A spray suppression device comprising a grass-like three-dimensional layer of low density polyethylene fusion bonded to a high density polyethylene substrate, said spray suppression device having been subjected to high energy ionizing radiation in an amount sufficient to provide a spray suppression device which remains ductile at temperatures down to at least about minus 20° F. (minus 29° C.).

4,361,607

COLOR STABILIZED MOLDED RUBBER SKIRTS IN COMBINATION WITH STAINLESS STEEL BEVERAGE SYRUP CONTAINERS

James A. Davis, Uniontown, and Robert C. Koch, Akron, both of Ohio, assignors to Spartanburg Steel Products, Inc., Spartanburg, S.C.

Filed Apr. 17, 1980, Ser. No. 141,244

Int. Cl.³ B65D *6/34;* B32B *15/08*

U.S. Cl. 428—35 **8 Claims**

1. A color stabilized rubber skirt for a beverage container resistant to color deterioration resulting from immersion in a pickling solution, a caustic solution, and a hot water bath comprising a rubbery polymer selected from a group consisting of natural rubber, synthetic rubber and blends thereof, a color pigment, a mineral filler and a mercapto silane.

4,361,608

RUBBER LAMINATE AND PROCESS FOR PRODUCTION THEREOF

Yasuyoshi Furukawa, Neyagawa, and Shinji Yoshida, Settsu, both of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 81,896, Oct. 4, 1979, abandoned. This application May 6, 1981, Ser. No. 261,030
Claims priority, application Japan, Oct. 6, 1978, 53/123901; United Kingdom, Oct. 4, 1979, 7934408
Int. Cl.³ B32B *27/00*; F16L *11/04*; C09J *5/02*
U.S. Cl. 428—36 16 Claims

1. A hose possessing excellent impermeability to liquids which comprises a rubber laminate consisting essentially of at least one sheet of a fluorine-containing rubber and at least one sheet of a nitrile/butadiene rubber wherein either one of said rubber sheets is incorporated with an epoxy resin and the other one of said rubber sheets is incorporated with a curing agent for said resin, said sheets being directly adhered to each other in a cured state.

9. A process for producing a rubber laminate, which comprises providing a sheet of fluorine-containing rubber and a sheet of nitrile/butadiene rubber, one of said sheets having mixed therein an epoxy resin and the other of said sheets having mixed therein a curing agent for said epoxy resin, assembling said sheets so as to form a laminate arrangement and applying pressure to said rubber laminate arrangement in the presence of a curing temperature so as to produce said rubber laminate.

4,361,609

FIBER STRUCTURES OF SPLIT MULTICOMPONENT FIBERS AND PROCESS THEREFOR

Klaus Gerlach, Obernau; Nikolaus Mathes, Breuberg, and Friedbert Wechs, Worth am Main, all of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 16,560, Mar. 1, 1979, Pat. No. 4,239,720. This application Jul. 17, 1980, Ser. No. 169,541
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1978, 2809346; Mar. 3, 1978, 7806496[U]; Mar. 3, 1978, 7806500[U]; Mar. 3, 1978, 7806518[U]; Mar. 3, 1978, 7806531[U]; Mar. 3, 1978, 7806532[U]; Mar. 3, 1978, 7806543[U]; Apr. 3, 1978, 7806419[U]; Dec. 23, 1978, 2856091; Jan. 25, 1979, 2902758
Int. Cl.³ B32B *3/02, 33/00*; D04B *7/16*
U.S. Cl. 428—90 12 Claims

1. A fiber structure composed of partly split multicomponent fibers of the matrix-segment type, characterized by partial splitting up into matrix fibers and segment fibers, whereby the only partly split multicomponent fibers still show a mechanical coherence of matrix and segment components, with, in part, slits between the matrix and segment fibers and, in part, merely longitudinal grooves at the edge of the multicomponent fiber, which correspond to the phase boundaries.

4,361,610

NON-SKID CARPET PROTECTOR

David W. Roth, Detroit, Mich., assignor to The 2500 Corporation, Lathrup Village, Mich.

Filed Mar. 17, 1980, Ser. No. 131,262
Int. Cl.³ B32B *3/06*; B60J *9/00*
U.S. Cl. 428—95 5 Claims

1. A non-skid carpet protector adapted to be used on vehicle carpets including, in combination, a carpet backing of a desired shape and cross section, a separate layer of covering material of a complimentary shape attached to the top of said carpet backing, and a plurality of stiff bristles having a spacing therebetween sufficient to allow the insertion of a floor carpet material in a frictional mesh engagement, wherein said stiff bristles are closely and densely packed, and are boar bristles.

4,361,611

PROCESS FOR PROVIDING SYNTHETIC TEXTILE FABRICS WITH AN ANTISTATIC FINISH

Paul Schäfer, Riehen, Switzerland; Fritz Mayer, Weil am Rhein, Fed. Rep. of Germany, and Jürg Kündig, Reinach, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 10, 1980, Ser. No. 214,826
Claims priority, application Switzerland, Dec. 20, 1979, 11316/79
Int. Cl.³ B32B *7/00*; B05D *3/02*
U.S. Cl. 428—96 11 Claims

1. A process for providing a synthetic textile fabric with an antistatic finish, comprising the step of coating said fabric with an aqueous film-forming preparation which contains a phosphoric or phosphorous acid ester of an alcohol of the formula

$$HO—(CH_2CH_2O)_nZ$$

wherein Z is hydrogen or alkyl of 1 to 4 carbon atoms, and n is 10 to 50.

4,361,612

MEDIUM DENSITY MIXED HARDWOOD FLAKE LAMINA

Kenneth H. Shaner, Monroe; Bruce J. Thoman, Chester; Mark D. Peterson, Cornwall-on-Hudson; David A. Fergus, Goshen, all of N.Y., and Karl K. Chiang, Vancouver, Wash., assignors to International Paper Co., New York, N.Y.

Filed Jul. 14, 1981, Ser. No. 283,162
Int. Cl.³ B32B *21/02, 21/08, 21/14*
U.S. Cl. 428—106 29 Claims

16. A medium density structural board comprising at least three lamina bonded together with a thermosetting resin wherein the core comprises a lamina having a density in the range of 40 to 50 pounds per cubic foot comprising wood flakes aligned normal to the length of the lamina, said flakes formed from a mixture of hardwood species, said mixture of hardwood species flakes comprising between 10 and 90 percent, by weight, high density hardwood species having individual species average specific gravities not less than 0.6, said flakes having a length up to 6.0 inches, a width up to 2 inches and a thickness in the range of 0.010 to 0.100 inch, the ratio of flake length to flake thickness defining a slenderness ratio greater than 30, the ratio of flake length to flake width defining an aspect ratio greater than 1.5, the ratio of the modulus of elasticity across the lamina to the modulus of elasticity along the lamina defining a degree of flake alignment in the range of 1.0 to 7.0; a phenol formaldehyde thermosetting resin in the range of 2–9 percent by weight having a formaldehyde/phenol ratio in the range of 1.4 to 2.0 and containing a major quantity

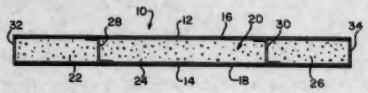
of a low molecular weight fraction; and not more than 5 percent by weight of wax, wherein the retained internal bond strength exceeds about 35 psi, after said lamina is subjected to one cycle of hot water vacuum pressure soak, under 150° F., 15 in. mercury, for 30 minutes, followed by hot water soak (150° F.) at 1 atmosphere for 30 minutes and subsequently oven dried at 180° F. for 16 hours.

4,361,613

COMPOSITE CONSTRUCTION MATERIALS WITH IMPROVED FIRE RESISTANCE

Ben R. Bogner, Wheaton; Keith B. Bozer, Richmond; William R. Dunlop, Rolling Meadows, and Robert H. Leitheiser, Crystal Lake, all of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Sep. 21, 1981, Ser. No. 303,899
Int. Cl.³ B32B *7/00, 7/04, 31/00*
U.S. Cl. 428—119 20 Claims



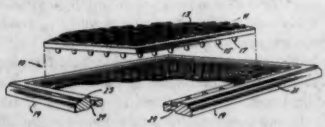
1. A building panel assembly adapted to provide thermal insulation, improved fire resistance and decreased degradation into combustible byproducts under high temperature conditions, said panel comprising, in combination, at least one rigid abrasion-resistant laminated facing sheet adapted to provide structural strength for said panel, and an insulating foam core portion, said facing sheet being comprised of a plurality of layers of a composite material, said composite material including a cured resin component, a fire retardant additive for said resin, and a glass fiber material embedded within and serving to reinforce impart increased structural strength and flexibility thereto, said foam core portion comprising a plurality of individual core sections each having one face portion disposed in facing relation to said facing sheet and an edge portion lying adjacent an edge on another of said sections, at least one longitudinally extending laminated separator disposed between and bonded to adjacent edge portions of said core sections, said separator also having a portion thereof bonded to a portion of said facing sheet, said separator comprising a plurality of layers of said composite material, said foam core portion also having exterior edges covered by a plurality of layers of said composite material, a major portion of said resin being a curable, furan-based polymer.

4,361,614

SLIP RESISTANT MAT WITH MOLDING AND METHOD OF ASSEMBLY

Merritt L. Moffitt, Jr., 9 Weirwood Rd., Radnor, Pa. 19087

Filed May 20, 1981, Ser. No. 265,491
Int. Cl.³ B32B *3/26, 7/04*
U.S. Cl. 428—138 22 Claims



1. A slip resistant mat assembly comprising:
a slip resistant mat having projections extending from the bottom face thereof;
means for framing the periphery of said slip resistant mat, said framing means receiving some of said mat periphery bottom projections extending completely through said framing means; and
means for locking the free ends of said received projections together thereby locking said slip resistant mat to said framing means.

4,361,615

BOWLING LANE

Peter B. Kelly, Coshocton, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 60,755, Jul. 26, 1979, abandoned, which is a continuation of Ser. No. 767,263, Feb. 10, 1977, abandoned.
This application May 12, 1981, Ser. No. 262,801
Int. Cl.³ B32B *3/00, 7/14*
U.S. Cl. 428—203 20 Claims

1. In a bowling lane having an approach area and a lane area separated by a foul line, the improvement which comprises using a single laminate panel for at least a part of said approach area surface and extending into said lane area beyond said foul line, said laminate panel comprising a resin impregnated reinforced core, a print sheet disposed on said core, a thermosetting resin overlay on said print sheet, said print sheet being between said core and said overlay and the configuration for said foul line being between said overlay and said core and being visible through said overlay.

4,361,616

LAMINATED BOARD

Joseph J. P. Bömers, Weert, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Feb. 26, 1980, Ser. No. 124,903
Claims priority, application Netherlands, Mar. 1, 1979, 7901627; Jan. 12, 1980, 8000196
Int. Cl.³ B32B *7/02, 5/16*
U.S. Cl. 428—215 14 Claims

1. An insulating board laminate panel structure having a combination of a fiber reinforced water-hardened cement mortar layer securely bonded to an insulating foam material so that high bond strength between said insulating board and said cement mortar layer is achieved and said resulting laminate panel has higher buckling strength, load bearing and impact resistance, wherein said panel structure is composed of:
(A) said insulating board foam material having a density of less than about 0.5 grams/cc; and
(B) said water-hardened cement mortar layer adjacent said insulating board material has a composition consisting essentially of:
(i) cement mortar having a weight ratio of water to said cement mortar between 0.2 to 0.5, and further having up to 40 percent by volume of reinforcing fibers; and
(ii) a dispersion of an addition-polymerized resin of vinyl monomers having an average particle size of between 0.05 to 1.5 microns, said resin being present in a resin to said cement weight ratio of between 0.02 to 0.4 and containing between 2.5% to 30.0% by weight of monomers having an acid group.

6. Laminate panel structure according to claim 1 or 5, wherein said cement layer is from 1 mm to 50 mm thick and said insulating material is from 10 mm to 500 mm thick.

4,361,617
HOLLOW WATER-ABSORBING POLYESTER FILAMENTS AND A PROCESS FOR PRODUCING THE SAME

Togi Suzuki; Kiyokazu Tsunawaki, both of Matsuyama; Osamu Wada, Takatsuki, and Akio Kimura, Ashiya, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jul. 23, 1980, Ser. No. 171,335

Claims priority, application Japan, Jul. 26, 1979, 54-94189; Sep. 11, 1979, 54-115730

Int. Cl.³ D03D *3/00*

U.S. Cl. 428—224 **28 Claims**

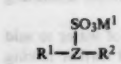
x 3000

1. A hollow water-absorbing polyester filament having at least one hollow extending in parallel to the longitudinal axis of said filament, and a number of caves distributed in at least a portion of the body of said filament and consisting of a number of fine outside concaves formed in the peripheral surface of said filament, a number of fine pores formed within the body of said filament, a number of fine inside concaves formed in the hollow surface of said filament, and a number of fine channels through which said pores are connected to each other, and to said outside concaves and inside concaves, said outside and inside concaves and said pores extending approximately in parallel to the longitudinal axis of said filament, which filament has been prepared by the process comprising the steps of:

(A) preparing hollow polyester filaments each having at least one hollow extending in parallel to the longitudinal axis of said filament, from a blend of (a) a principal polyester component which comprises an acid moiety comprising at least one aromatic dicarboxylic acid or its ester-forming derivative and a glycol moiety comprising at least one alkylene glycol having 2 to 6 carbon atoms or its ester-forming derivative, with (b) a cave-forming agent, and

(B) removing at least a portion of said cave-forming agent and a portion of said principle polyester component from said resultant hollow polyester filaments by treating them with an alkali aqueous solution, said cave-forming agent comprising at least one member selected from the group consisting of

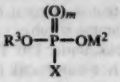
(i) copolyester which comprises a glycol compound moiety, an aromatic dicarboxylic acid compound moiety and an additional divalent organic sulfonic acid compound moiety of the formula (II):



(II)

wherein Z represents a member selected from the group consisting of trivalent aromatic hydrocarbon radicals and trivalent aliphatic hydrocarbon radicals, M^1 represents a member selected from the group consisting of hydrogen and metal atoms; R^1 represents an ester-forming organic radical and R^2 represents a member selected from the group consisting of a hydrogen atom and ester-forming organic radicals;

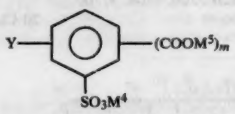
(ii) phosphorus compounds of the formula (III):



(III)

wherein R^3 represents a monovalent organic radical; X represents a member selected from the group consisting of —OR^4, wherein R^4 represents a hydrogen atom or a monovalent organic radical, —OM^3, wherein M^3 represents a metal atom, and a monovalent organic radical; M^2 represents a metal atom and; m represents zero or 1; and

(iii) aromatic carboxy-sulfonic acid compounds of the formula (IV):



(IV)

wherein Y represents a member selected from the group consisting of a hydrogen atom and ester-forming organic radicals, M^4 represents a metal atom, M^5 represents a metal atom, and n represents an integer of 1 or 2.

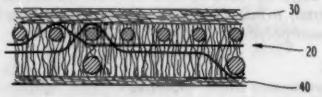
4,361,618
PAPERMAKERS FELT WITH IMPROVED DRAINAGE

Marcel Dufour, St Yrieix, and Ecrire Pascaud, Gond Pontouvre, both of France, assignors to Ascoe Felts, Inc., Clinton, S.C.

Filed May 18, 1981, Ser. No. 265,187

Int. Cl.³ B32B *5/06*

U.S. Cl. 428—234 **21 Claims**



1. A papermaker's felt comprising:

(a) a base fabric, said base fabric further comprising:

(i) at least first and second machine direction yarn systems, said second machine direction yarn system comprised of cable yarns which are fewer in number and greater in diameter than the yarns of said first machine direction yarn system and

(ii) at least one a cross machine yarn system interwoven with said first machine direction yarn system in a selected repeat pattern, said cross machine yarn system having selected yarns within said repeat pattern which interweave with said cable yarns, each of said selected yarns to interweave with one cable yarn within said repeat pattern;

(b) a first batt needled to said base fabric; and

(c) a second batt needled to said base fabric adjacent to said cable yarns.

4,361,619

FILTER OF POLY(TETRAFLUOROETHYLENE) AND GLASS FIBERS

Herman H. Forsten, Hockessin; Peter E. Frankenburg, and Jagdish N. Shah, both of Wilmington, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 20, 1981, Ser. No. 265,444

Int. Cl.³ B01D *39/16, 39/20;* B32B *31/08;* D04H *1/46*

U.S. Cl. 428—234 11 Claims

1. An intimate blend of

poly(tetrafluoroethylene) and glass staple fibers containing 65–99 percent by weight

poly(tetrafluoroethylene) fibers having a denier per filament of 2–25 and 1–35 percent by weight glass fibers having a denier per filament of 0.1–1.

2. An improved filter felt comprising a needled batt of the intimate fiber blend of claim 1.

9. Process for preparing the filter felt of claim 2 by blending 65–99 percent by weight poly(tetrafluoroethylene) fibers with 1–35 percent by weight glass fibers in a picker, further blending of the fibers in a carding machine, forming a nonwoven batt by crosslapping, combining layers of the batt if necessary to form a layered batt of the desired thickness, needling the batt with a needle loom to provide a felt and heat setting the felt by heating on a tenter frame for at least two minutes at 230°–325° C.

4,361,620

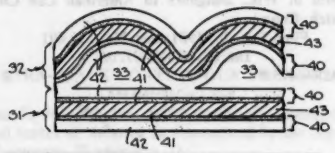
TOTAL ENERGY EXCHANGE MEDIUM AND METHOD OF MAKING THE SAME

Emerson H. Newton, Arlington, Mass., assignor to Wing Industries, Inc., Cranford, N.J.

Division of Ser. No. 18,793, Mar. 8, 1979, Pat. No. 4,290,789. This application Apr. 20, 1971, Ser. No. 255,562

Int. Cl.³ B32B *5/16*

U.S. Cl. 428—341 18 Claims



1. A total energy exchange medium comprising aluminum having an adherent moisture-absorbing coating thereon, said coating having a dual structure and comprising hydroxides or hydrated oxides of calcium and aluminum.

11. A process according to claim 1 wherein the pH is brought into the range of about 7 to 11 with an alkali metal hydroxide.

4,361,621

MAGNETIC RECORDING MEDIUM

Yukihiro Isobe; Kiyotaka Okuyama; Akihiko Hosaka, and Hideo Kobayashi, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jun. 4, 1981, Ser. No. 270,565

Claims priority, application Japan, Jun. 20, 1980, 55-83662

Int. Cl.³ B32B *5/16*

U.S. Cl. 428—329 5 Claims

1. A magnetic recording medium; which comprises:

a substrate coated with a magnetic layer formed from a magnetic composition comprising a binder and a magnetic powder, the particles of said magnetic powder having ricinoleic acid or ester thereof adsorbed thereon in an amount which increases the adhesive strength between said particles and the binder.

4,361,622

SILICATE COATING FOR HEAT-RESISTANT OBJECTS, SAID COATING HAVING A HEAT TRANSFER FUNCTION; OBJECTS HAVING SAID COATING; AND PROCESS FOR PRODUCING SUCH A COATING

Günter Theisen, Riedlingen; Alfred Eppich, and Rudolf H. Hochleitner, both of Zirndorf, all of Fed. Rep. of Germany, assignors to Leipold & Eppich KG, Zirndorf via Nurnberg, Fed. Rep. of Germany

Filed Nov. 4, 1980, Ser. No. 203,906

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1979, 2945288

Int. Cl.³ B32B *5/16, 19/00*

U.S. Cl. 428—363 10 Claims

1. A heat resistant object having a coating on a surface thereof for improving the heat transfer properties of said surface, said coating consisting essentially of an inorganic silicate mixture containing at least 10% by weight of mica baked on said surface at a temperature below the decomposition, melting or dissolving temperature of said mica, wherein said mica is modified with titanium dioxide.

4,361,623

FLAME RETARDANT ANTISTATIC ADDITIVES AND ANTISTATIC FIBERS

David D. Newkirk, Southgate; Robert B. Login, Woodhaven, and Basil Thir, Wyandotte, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 94,032, Nov. 13, 1979, Pat. No. 4,294,944, which is a division of Ser. No. 746,723, Dec. 2, 1976, Pat. No. 4,229,554. This application Jun. 20, 1980, Ser. No. 161,730

Int. Cl.³ B32B *27/00;* D02G *3/00*

U.S. Cl. 428—394 9 Claims

1. A flame-retardant, antistatic synthetic polymeric fiber which is the product of the process of coating on said fiber about 1 percent to about 12 percent by weight of a polymer composition which is the reaction product having as a nucleus a nitrogen containing reactive hydrogen containing compound with a diol which is halogenated.

4,361,624

SPRAY-DRIED HOLLOW FIBERS

Bruce D. Spivack, Norristown, Pa., assignor to PQ Corporation, Valley Forge, Pa.

Filed Jan. 22, 1981, Ser. No. 227,130

Int. Cl.³ D02G *3/00*

U.S. Cl. 428—398 4 Claims

1. A hollow fiber prepared by spray drying a film forming substance dissolved in a volatile solvent characterized in that the film-forming substance consists of sodium silicate and an inorganic polysalt; the solvent is water; the fibers are more than 100 microns in length, have an aspect ratio or 8 or more, a loss on ignition of 8 to 20% by weight and a true density of 0.7 to 1.1 g/ml.

4,361,625

PLASTICIZER-CONTAINING FILMS OF PARTIALLY ACETALIZED POLYVINYL ALCOHOLS

Rolf Beckmann, Siegburg, and Wilhelm Knackstedt, Hennef, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed May 10, 1979, Ser. No. 37,771

Claims priority, application Fed. Rep. of Germany, May 12, 1978, 2820780

Int. Cl.³ B32B *27/36, 17/10*

U.S. Cl. 428—412 9 Claims

1. A composite safety glass product which comprises a sheet of transparent silicate glass adhesively bonded to a sheet of material comprising a transparent silicate glass or a transparent synthetic resin, said sheets being bonded by a film of a partially butyralized polyvinyl alcohol resin having a hydroxy group

content of 5–30% by weight calculated as the polyvinyl alcohol, and containing as a plasticizer

(a) an ester of an organic cyclic acid selected from the group consisting of di(2-ethylhexyl)phthalate, diisodecylphthalate, a phthalate of a mixture of aliphatic alcohols of 7–13 carbon atoms, benzylbutyl phthalate, dipropylene glycol dibenzoate and butyl phthalylbutyl glycolate, and

(b) an ester of an oxygen acid of phosphorus selected from the group consisting of tri(2-ethylhexyl)phosphate, tributyoxyethyl phosphate, 2-ethylhexyldiphenyl phosphate and decyldiphenyl phosphate, and said film containing the plasticizer in amounts of 20–85% by weight, based on the total weight of the film.

4,361,626
METHODS FOR BONDING DISSIMILAR SYNTHETIC POLYMERIC MATERIALS AND THE PRODUCTS INVOLVED IN AND RESULTING FROM SUCH METHODS

Joseph Boba, Fort Lee, N.J.; Seevaram N. Varadhachary, and Vincent F. Pogozelski, both of Newtown, Pa., assignors to Congoleum Corporation, Kearny, N.J.

Filed Sep. 8, 1980, Ser. No. 184,829
Int. Cl.³ B32B *7/04, 31/04, 27/40, 77/30*
U.S. Cl. 428—420 **23 Claims**

1. A multi-layered construction of dissimilar synthetic polymeric materials comprising a first layer of synthetic polymeric material containing a vinyl resin, at least one plasticizer for said vinyl resin and from about 0.5 to about 20% by weight a chemical compound containing reactive hydrogen selected from the group consisting of hydroxy, carboxy, amido, amino, imino and mercapto; and a second layer of synthetic polymeric material containing a member of the group consisting of polyurethane and acrylated polyurethane compositions, containing from about 0.5% to about 10% by weight of a free available isocyanate, said two layers of synthetic polymeric materials being bonded in a strong and permanent primary chemical bond therebetween by a reaction product of said chemical compound containing reactive hydrogen and said polyurethane or acrylated polyurethane composition.

9. A method of improving the bond between a vinyl resin material and a member of the group consisting of polyurethane and acrylated polyurethane resin materials which comprises: including from about 0.5 percent by weight to about 20 percent by weight of a chemical compound containing reactive hydrogen in said vinyl resin material; providing from about 0.5 percent by weight to about 10 percent by weight of free available isocyanate in said polyurethane and acrylated polyurethane resin materials; bringing said vinyl resin material and said polyurethane and acrylated polyurethane resin materials into contact; and exposing said vinyl resin material and said polyurethane and acrylated polyurethane resin materials to curing conditions, whereby there is sufficient chemical inter-reaction between said resin materials as to create a strong and permanent primary chemical bond therebetween, in addition to any hydrogen bonds or van der Waals forces.

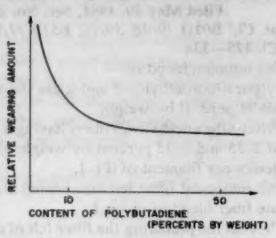
4,361,627
MAGNETIC RECORDING MEDIUM

Tsumoru Ohata, Sendai, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 958,420, Nov. 7, 1978, abandoned. This application Oct. 17, 1980, Ser. No. 198,152
Claims priority, application Japan, Nov. 10, 1977, 52-1350792
Int. Cl.³ G11B *5/70*
U.S. Cl. 428—425.9 **13 Claims**

1. In a magnetic recording medium comprising a non-magnetic substrate and a magnetic layer formed thereon, said magnetic layer comprising a finely divided ferromagnetic substance dispersed in a resinous binding agent, said binding agent comprising:

a binder containing a butadiene-containing resin having an average molecular weight of 1,000 to 10,000 and being selected from the group consisting of butadiene homopolymers and copolymers of butadiene with acrylonitrile and/or styrene which contain at least 60 percent by weight of butadiene, said butadiene-containing resin having on the average more than 1.5 end functional groups reactive with isocyanate groups per molecule; and

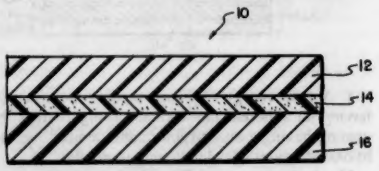


a polyisocyanate compound having on the average not less than 2 isocyanate groups per molecule, said polyisocyanate compound being present in an amount between 5 and 50 parts by weight based upon 100 parts by weight of said binder.

4,361,628
COEXTRUDED FILM OF POLYPROPYLENE, POLYPROPYLENE BLEND, AND NYLON

Duane A. Krueger, Neenah, and Thomas W. Odorzynski, Green Bay, both of Wis., assignors to American Can Company, Greenwich, Conn.

Filed Feb. 20, 1981, Ser. No. 236,601
Int. Cl.³ B32B *27/08*
U.S. Cl. 428—475.8 **4 Claims**



1. A coextruded multiple layer plastic film comprising, in sequential order of layering:

(a) polypropylene;

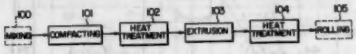
(b) a functionally adhesive blend of a graft copolymer of maleic anhydride onto a polypropylene backbone and an ungrafted polypropylene, said graft copolymer having been produced in a reaction carried out at a temperature of from about 80° Celsius up to about 10° Celsius below the melting point of the polypropylene, said graft copolymer containing from about 0.5% to 5% maleic anhydride based on the total weight of the graft copolymer, said graft copolymer comprising between about 5% and 30% by weight of the blend, and said ungrafted polypropylene comprising between about 70% and 95% by weight of the blend; and

(c) nylon.

4,361,629
BEARING MATERIAL AND METHOD OF PRODUCING SAME

Sanae Mori, Nagoya, Japan, assignor to Daido Metal Company Ltd., Nagoya, Japan

Filed Jul. 11, 1980, Ser. No. 167,589
Int. Cl.³ B22F 3/00
U.S. Cl. 428—553 12 Claims



1. A method of producing powdered and extruded single layer bearing material containing Al as its main component, comprising the steps of:

mixing powdered materials to form a powder mixture comprising 0.5–40 wt% in total of at least one type of lubricant additive selected from the group consisting of low melting-point metal lubricants, solid lubricants, and plastics, and the balance Al and inevitable impurities;

compacting the mixed powder to a desired shape;

subjecting the shaped material to heat treatment at a temperature below the temperature for initiating solidification of a bearing material;

extruding the heat-treated, shaped material;

subjecting the extruded material to a second heat treatment at a temperature below the solidification initiating temperature of the beaaring material; and

rolling the heat-treated material, when necessary.

4,361,630
ULTRA-BLACK COATING DUE TO SURFACE MORPHOLOGY

Christian E. Johnson, Sr., Middletown, Md., assignor to The United States of America as represented by the Secretary of the Commerce, Washington, D.C.

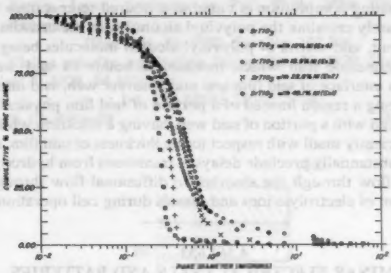
Continuation of Ser. No. 156,442, Jun. 4, 1980, abandoned, which is a division of Ser. No. 31,706, Apr. 20, 1979, Pat. No. 4,233,107. This application Aug. 18, 1981, Ser. No. 293,783
Int. Cl.³ B32B 3/00, 15/04, 15/16
U.S. Cl. 428—613 2 Claims

1. A substrate coated with a nickel-phosphorous alloy having an ultra-black surface, the blackness being associated with a unique surface morphology consisting of a dense array of microscopic pores etched into the surface, said ultra-black surface having a spectral reflectance on the order of approximately from 0.5 to 1.0% at wavelengths of light of about from 320 to 2140 nanometers, wherein said pores are conical and have a diameter and spacing such that said surface morphology includes substantially no land area of nickel-phosphorous alloy between said conical pores.

4,361,631
ELECTRODE MATERIAL FOR MOLTEN CARBONATE FUEL CELLS

Charles D. Iacovangelo, Schenectady, and Kenneth P. Zarnoch, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 194,474, Oct. 6, 1980, abandoned. This application Mar. 19, 1982, Ser. No. 360,073
Int. Cl.³ H01M 4/86
U.S. Cl. 429—40 4 Claims

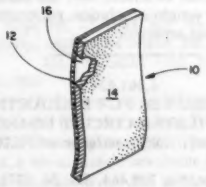


1. An electrode useful for a molten carbonate fuel cell consisting of metal encapsulated substrate particles sintered together only by means of said metal without significant exposure of the surface of said substrate particles, said electrode having a pore volume greater than 40% by volume but less than 85% by volume of the electrode, said electrode having a pore size ranging from about 0.1 micron to about 20 microns, said metal being selected from the group consisting of copper and nickel, and said substrate particles being selected from the group consisting of lithium aluminate, strontium titanate, α-alumina and mixtures thereof, said substrate particles ranging in size from about 0.1 micron to about 100 microns.

4,361,632
ALKALINE BATTERY, COMPOSITE SEPARATOR THEREFOR

Robert E. Weber, Appleton, and Joseph Borovsky, Menasha, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed May 22, 1981, Ser. No. 266,437
Int. Cl.³ H01M 2/16
U.S. Cl. 429—145 14 Claims



1. An improved composite absorber/barrier battery separator for use in an alkaline battery cell for physically separating electrodes of said cell and for controlling the transfer of ions in an electrolyte solution during cell operation, in which said composite separator includes an absorber comprised of a flexible and fibrous substrate, resistant to strong alkali and oxidation while holding electrolyte in contact with said electrodes during electrolyte ion transfer, said improvement comprising:

a moderately cured polyvinyl alcohol film adhered to at least one side of said absorber prepared from an aqueous coating composition comprising of:

(a) a polyvinyl alcohol aqueous dispersion comprised of (1) a noncrosslinked polyvinyl alcohol solution, (2) inert hydrophilic fillers (3) a dispersing agent, (4) a water soluble plasticizer, and (5) a low molecular weight alcohol-water mixture; and

(b) a crosslinking agent admixture comprised of; (1) a crosslinking agent, and (2) a catalyst;

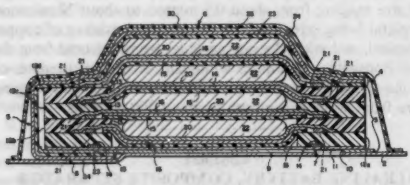
said dispersion and said admixture being characterized by having an insitu crosslinking property for forming a matrix of polyvinyl alcohol molecules which is insoluble in alkaline electrolyte, said crosslinking property being activated when said coating composition is cured at a desired temperature to moderately crosslink the polyvinyl alcohol with the crosslinking agent, said matrix of polyvinyl alcohol molecules being a semi-permeable film which mechanical bonds to said web along a interface of said film and said absorber web, said interface being a region formed of a portion of said film physically entangled with a portion of said web, having a thickness which is sufficiently small with respect to the thickness of said film, so as to substantially preclude delays in transitions from hydrodynamic flow through the absorber to diffusional flow through said film of electrolyte ions and masses during cell operations.

4,361,633

LAMINAR ELECTRICAL CELLS AND BATTERIES

Pierre E. Nel, Lynnfield, and Joanne C. Pleskowicz, Billerica, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 24, 1981, Ser. No. 295,267
Int. Cl.³ H01M 6/12
U.S. Cl. 429—162 **2 Claims**



1. A laminar electrical cell comprising an anode comprising a solid deposit of zinc powder in a binder on a conductive plastic substrate, a cathode comprising a mixture of MnO_2 and carbon particles, a cellophane separator beteween and in contact with said anode and said cathode, and a solution consisting essentially of from about 1 to 3 percent of NH_4Cl, from about 20 to 29 percent of $ZnCl_2$, and the balance water, by weight based on the weight of solution, permeating said anode, said cathode, and said separator.

4,361,634

ARTWORK MASTER FOR PRODUCTION OF MULTILAYER CIRCUIT BOARD

Robert Miller, Poway, Calif., assignor to NCR Corporation, Dayton, Ohio

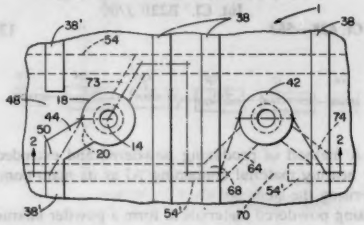
Continuation of Ser. No. 708,464, Jul. 26, 1976, abandoned, which is a division of Ser. No. 593,341, Jul. 3, 1975, abandoned. This application Jan. 30, 1979, Ser. No. 7,731
Int. Cl.³ G03F 5/00
U.S. Cl. 430—5 **2 Claims**

1. In an artwork master for the manufacture of one layer in a multilayer printed circuit board:

a plurality of parallel artwork traces corresponding to conductive traces on the one layer in the printed circuit board, said traces extending substantially across the artwork master;

an array of artwork pads corresponding to conductive pads on the one layer of the printed circuit board, said artwork pads distributed over the artwork master and forming parallel columns interspersed between said parallel artwork traces; and

interconnecting artwork traces extending from at least some of said parallel artwork traces to adjacent ones of said artwork pads, said parallel artwork traces including interrupted portions adjacent at least some of said interconnecting artwork traces;



said parallel artwork traces and said artwork pads being formed with a higher degree of precision than said interconnecting artwork traces and said interrupted portions of said parallel artwork traces.

4,361,635

PHOTOLITHOGRAPHIC ELEMENT CONTAINING A SILVER-RECEPTIVE POLYALDEHYDE-CONTAINING RECEIVING LAYER

Gerard H. Kinderman, Saint Paul, Minn., and James F. Sanders, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jun. 19, 1981, Ser. No. 275,437
Int. Cl.³ G03C 5/54, 1/48
U.S. Cl. 430—14 **18 Claims**

9. A lithographic plate comprising a support, a silver halide emulsion layer over said support, and a receptor layer over said emulsion layer having ink receptive image areas on the surface thereof, said receptor layer comprising a high molecular weight hydrophilic polymer and catalytic nuclei for silver salt diffusion transfer development, the major proportion of said polymer being a dialdehyde polysaccharide, and said image areas comprising silver metal produced by silver salt diffusion transfer development in said receptor layer.

4,361,636

IONIC POLYESTERS FOR ELECTRICALLY PHOTOSENSITIVE COMPOSITE PARTICLES, MATERIALS, ELEMENTS AND PHOTOELECTROPHOTORETIC IMAGING METHODS

Henry V. Isaacson, Webster, and Michael T. Regan, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 22, 1981, Ser. No. 256,338
Int. Cl.³ G03G 17/04
U.S. Cl. 430—32 **7 Claims**

1. A photoelectrophoretic image recording method comprising the steps of:

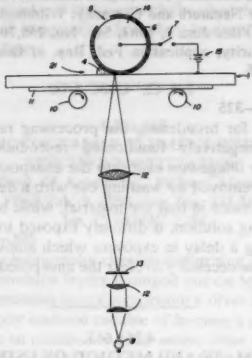
(a) subjecting an imaging element comprising a layer of an electrically photosensitive material to an electrical field; and

(b) exposing said element to an image pattern of electromagnetic radiation to which said layer is photosensitive to form a record of the image pattern of electromagnetic radiation in said layer; wherein, said layer contains composite electrically photosensitive particles comprising a colorant and an ionic polyester comprising, as an integral part of the polymer backbone, repeating units from diol derived and diacid derived components, of which:

a diacid derived component contains a moiety selected

from the group consisting of an alkali metal or ammonium sulfoarylene, -sulfoaryloxyarylene, -sulfocycloalkylene, -iminodisulfonylarylene, -iminobis(sulfonylarylene) and sulfoaralkylarylene, and

a diol or diacid derived component contains a moiety selected from the group consisting of bis(N-alkyl-N-



alkyleneaminoaryl)arylalkane; bis(N-alkyl-N-alkyleneaminoaryl)diarylalkane; bis(N-alkyl-N-alkyleneaminoaryl)isoalkane; bis(N-alkyl-N-alkyleneaminoaryl)cycloalkane; dialkyleneaminotetraarylalkane; bis(alkylenearyl)arylamine and alkylenetriarylamine.

4,361,637

ELECTRON BIS-BENZOCARBAZOLE DONOR COMPOUNDS AND PHOTOCONDUCTIVE CHARGE TRANSPORT MATERIALS

John J. Stofko, Jr., St. Paul; Kenneth G. Kneipp, Maplewood, and Terry J. Sonnonstine, White Bear Lake, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

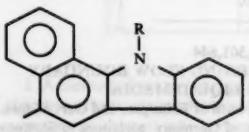
Filed Feb. 23, 1981, Ser. No. 237,068

Int. Cl.³ G03G *5/06*

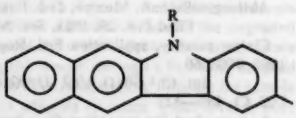
U.S. Cl. 430—58 **14 Claims**

1. An electronically active photoconductive insulating layer comprising a polymeric binder and an electrically active donor compound of the formula

where X is a group selected from



and



wherein R and Y are independently selected from the group consisting of aliphatic, aromatic, heterocyclic, and mixed aliphatic-aromatic groups.

4,361,638

ELECTROPHOTOGRAPHIC ELEMENT WITH ALPHA -SI AND C MATERIAL DOPED WITH H AND F AND PROCESS FOR PRODUCING THE SAME

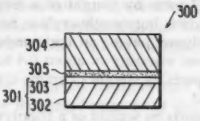
Akio Higashi; Kazuhiro Kawashiri, and Yuzo Mizobuchi, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 30, 1980, Ser. No. 202,201

Claims priority, application Japan, Oct. 30, 1979, 54-140284; Nov. 1, 1979, 54-141624

Int. Cl.³ G03G *5/082, 5/14*

U.S. Cl. 430—58 **18 Claims**



1. An electrophotographic light-sensitive element comprising an electrically conductive support coated with a photoconductive layer composed of a silicon- and carbon-based amorphous material doped with hydrogen and fluorine, wherein the amorphous material has a carbon to silicon atomic ratio in the range of from about 0.1:1 to about 0.3:1 and wherein the amount of fluorine doped in said amorphous material is from 0.01 to 20 atomic %, based on the total amount of atomic silicon and carbon.

4. An electrophotographic light-sensitive element according to claim **1**, **2** or **3**, wherein a charge transport layer is provided between the support and the photoconductive layer, and/or on the surface of the photoconductive layer on the side thereof opposite the support.

4,361,639

METHOD FOR TREATING LITHOGRAPHIC PRINTING PLATES

Eiji Kanada; Toshiro Kondo, and Shoji Yamada, all of Nagaoka-kyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Jul. 22, 1981, Ser. No. 285,321

Claims priority, application Japan, Jul. 29, 1980, 55-104176

Int. Cl.³ G03C *7/02, 5/54*

U.S. Cl. 430—204 **10 Claims**

1. In a method for treating a lithographic printing plate which utilizes as ink receptive areas a photographically formed silver image or silver halide image wherein after imagewise-/exposure of a silver halide emulsion layer and processing thereof to develop an image, the printing plate surface treatment is carried out at pH7 or below in the presence of an organic compound having at least one mecapto or thione group and at least one hydrophillic group in the same molecule and an inorganic water-insoluble colloidal silica or colloidal alumina powder having a particle size of 0.1 micron or below which are present in at least one printing plate treating solution selected from neutralizing solution, etch solution and dampening solution, said powder being present in an amount sufficient to prevent the ink-staining of said lithographic printing plate, said organic compound being present in an amount sufficient to promote effective absorption of said powder on said lithographic printing plate.

4,361,640

AQUEOUS DEVELOPABLE PHOTOPOLYMER COMPOSITIONS CONTAINING TERPOLYMER BINDER

Herbert J. Pine, Edison, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 2, 1981, Ser. No. 308,056
Int. Cl.[3] G03C 1/68
U.S. Cl. 430—275 13 Claims

1. A compatible, aqueous developable photopolymerizable composition consisting essentially of

(a) 22 to 32% by weight of an ethylenically unsaturated monomeric compound having at least two terminal ethylenic groups capable of forming a high polymer by free-radical initiated chain-propagated addition polymerization;

(b) 0.1 to 5.0% by weight of a free radical generating, addition polymerization initiator or initiator system activatable by actinic radiation;

(c) 40 to 80% by weight of a binder system which is the reaction product of

(1) 65 to 87 parts by weight of a terpolymer of methylmethacrylate, butylmethacrylate, and methacrylic acid, the terpolymer having an acid number of 175 to 200 and an inherent viscosity of about 0.4 to 0.5,

(2) 5 to 20 parts by weight of amine-terminated polyamide resin, and

(3) 5 to 20 parts by weight of a copolymer of vinyl pyrrolidone and vinyl acetate;

(d) 0.03 to 0.10% by weight of a thermal polymerization inhibitor;

(e) 0 to 18% by weight of a plasticizer for the composition; and

(f) 0 to 2% by weight of a tertiary amine capable of salt formation with a carboxylic acid, the percentages of the composition components being based on the total weight of the composition.

4,361,641

ELECTROLYTIC SURFACE MODULATION

John C. Angus, Cleveland Heights, Ohio; Kathleen M. Tomaswick, Arnold, Pa., and Uziel Landau, Cleveland Heights, Ohio, assignors to University Patents, Inc., Norwalk, Conn.

Filed Nov. 10, 1981, Ser. No. 320,142
Int. Cl.[3] G03C 5/00
U.S. Cl. 430—313 10 Claims

1. A method of electrolytically modulating the surface of an electrically conductive substrate to a predetermined profile, comprising the steps of:

(a) masking said surface with an ionic conductance resist having ionically conductive body portions and exhibiting a trans-resist ionic conductance or resistance profile which patterns said predetermined surface profile;

(b) subjecting the masked surface to electrolytic treatment with an ionic solution so as to effect modulation of said surface by passage of ionic species to or from said surface, at least a substantial proportion of said passage occurring through said body portions of said resist, the rate of said surface modulating ionic species passage at any given point along the masked portion of said surface being controlled by the transresist ionic conductance or resistance at that point, said electrolytic treatment being carried out for a period of time sufficient to thereby generate said predetermined surface profile; and

(c) removing said resist to thereby expose the resulting modulated surface.

2. The method of claim 1, wherein said resist is composed of a substantially continuous body of material and exhibits a varying trans-resist ionic conductance or resistance profile.

4. The method of claim 2, wherein said resist is formed by exposing a photosensitive polymeric film to light through an optical mask exhibiting an optical density profile which patterns said predetermined surface profile, the variations in the amount of light received by different areas of the thus exposed film producing corresponding variations in the extent to which said areas become crosslinked, thereby serving to induce the requisite ionic conductance or resistance profile in said resist.

4,361,642

PROCESS FOR PRODUCING PHOTOHARDENABLE REPRODUCTION MATERIALS

Mario Grossa, Dreieich, Fed. Rep. of Germany, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 1, 1981, Ser. No. 268,706
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1980, 3020976
Int. Cl.[3] G03C 5/00
U.S. Cl. 430—325 5 Claims

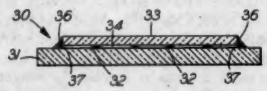
1. Process for broadening the processing range of photohardenable negatively functioning reproduction materials wherein after imagewise exposure the unexposed areas of the material are removed by washing out with a developing solution, characterized in that the material, while in contact with the developing solution, is diffusely exposed to actinic radiation following a delay in exposure which amounts to at least 5% of the time necessary to clear the unexposed photohardenable material.

4,361,643

PHOTOMASK AND METHOD OF USING SAME

Edward L. Banks, Willingboro Township, Burlington County, N.J.; Bruce E. Truax, Durham Township, Middlesex County, Conn., and Laurence S. Watkins, Hopewell Township, Mercer County, N.J., assignors to Western Electric Co., Inc., New York, N.Y.

Continuation-in-part of Ser. No. 222,451, Jan. 5, 1981, abandoned. This application Jul. 29, 1981, Ser. No. 287,970
Int. Cl.[3] G03C 5/06; G03F 9/00
U.S. Cl. 430—396 4 Claims



4. A method of selectively exposing a photoresist coated substrate to light radiation, comprising the steps of:

positioning a photomask between a light source and the photoresist coated substrate, the photomask comprising:

(a) a light transmissive baseplate having a metallic pattern thereon;

(b) a light transmissive coverplate in intimate contact with the patterned baseplate;

(c) a refractive index matching fluid interposed between, and having substantially the refractive index as, the baseplate and the coverplate; and

activating the light source to direct light radiation through the photomask to selectively expose the photoresist coated substrate thereto.

4,361,644

METHOD FOR RECORDING FLOW BOUNDARY LAYERS IN LIQUID MEDIA

Gerd Urban; Heinrich Opitz, both of Erlangen, and Gert Mages, Hemhofen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Feb. 20, 1981, Ser. No. 236,234
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1980, 3008260
Int. Cl.[3] G01D 9/42, 21/00; G01N 33/00
U.S. Cl. 430—422 8 Claims

1. A method for recording flow boundary layers in liquid media by photographic means, comprising:

(a) providing a solid planar surface;
(b) affixing to said surface a photographic sheet film containing silver halide in a gelatin layer; and
(c) exposing said surface, having said sheet film thereon, to a flowing liquid medium having dissolved therein an agent capable of diffusing into the gelatin layer of said photographic sheet and reacting with the silver halide therein to provide an image of the boundary layers of flow over said solid surface.

4,361,645

COLOR PHOTOGRAPHY ELEMENT WITH INDUCED SPECTROSENSITIZATION

Jean J. Robillard, 46 Arnold Rd., Pelham, Mass. 01002

Filed Feb. 3, 1981, Ser. No. 231,268
Int. Cl.³ G03C *1/76*
U.S. Cl. 430—505 **16 Claims**

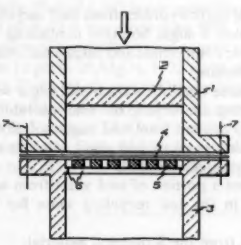
1. A color photography element comprising a support and a plurality of emulsion layers arranged one on top of the other, each of the emulsion layers comprising a silver halide, a color-forming coupler material capable of forming a color dye upon reacting with an oxidized organic amino color developer, and a sensitization promoter material which is capable of being converted into a sensitizer material for the silver halide to permit absorption of light rays in a part of the spectrum upon the application of an activation energy comprising electroenergy which is selected from the group consisting of an electric field, an ionic current and an electron current.

4,361,646

METHOD FOR DETERMINING BOTH WATER-INSOLUBLE AND WATER-SOLUBLE PLANT FIBRE COMPONENTS IN PLANT MATERIAL

Nils-Georg Asp, Lund, Sweden, assignor to Tecator AB, Hagana, Sweden

PCT No. PCT/SE79/00066, § 371 Date Nov. 26, 1980, § 102(e) Date Nov. 24, 1980, PCT Pub. No. WO80/02075, PCT Pub. Date Oct. 2, 1980
PCT Filed Mar. 26, 1979, Ser. No. 216,997
Int. Cl.³ C12Q *1/00;* G01N *31/00*
U.S. Cl. 435—4 **6 Claims**



1. A method of analyzing a dietary plant material in water to determine the water-insoluble and the water-soluble plant fibre components thereof, which comprises the steps of treating a sample of the plant material to degrade non-fibre components thereof and to substantially solubilize in water the degraded non-fibre components and the water-soluble fibre components of the sample; filtering the sample through a first filter adapted to retain water-insoluble fibre components; filtering the sample through a second filter adapted to retain water-soluble fibre components; and determining the amounts of said water-insoluble components and water-soluble components retained by said first and second filters respectively.

4,361,647

SANDWICH IMMUNOASSAY AND COMPOSITIONS FOR USE THEREIN

Jack S. Remington, and Fausto G. Araujo, both of Palo Alto, Calif., assignors to Palo Alto Medical Research Foundation, Palo Alto, Calif.

Filed May 22, 1980, Ser. No. 152,328
Int. Cl.³ C12Q *1/66*
U.S. Cl. 435—7 **6 Claims**

1. An immunoassay for detecting *Toxoplasma gondii* antigen associated with an acute form of Toxoplasma infection in a sample of an animal body fluid comprosing the steps of:
(a) adsorbing an $F(ab')_2$ fragment of IgG *Toxoplasma gondii* antibody or a monoclonal antibody for antigens of *Toxoplasma gondii* onto a solid surface;
(b) adding the sample to the adsorbed fragment of step (a) and incubating the resulting mixture;
(c) separating the adsorbed fraction from the non-adsorbed fraction of the incubated mixture of step (b);
(d) adding a labeled *Toxoplasma gondii* antibody to the adsorbed fraction of step (c) and incubating the resulting mixture;
(e) separating the adsorbed fraction from the non-adsorbed fraction of the incubated mixture of step (d); and
(f) determining the presence of labeled *Toxoplasma gondii* antibody in the adsorbed fraction of step (e).

4,361,648

COLOR FIXED CHROMOGENIC ANALYTICAL ELEMENT

Chen Shuenn-tzong, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Aug. 13, 1981, Ser. No. 292,345
Int. Cl.³ C12Q *1/26, 1/28, 1/44, 1/54, 1/60, 1/62, 1/32*
U.S. Cl. 435—10 **22 Claims**

1. A method for preparing an analytical element for determining an analyte in a liquid sample which method comprises the steps of:
(a) impregnating a carrier with a first solution having a pH not greater than about 2.5, which comprises a polymeric mordant present in a concentration from about 0.5 to about 0.75 percent of the first solution on a weight to weight basis, and a tetraalkylbenzidine dihydrocholoride, with the tetraalkylbenzidine dihydrochloride in a molar concentration greater than that of the polymeric mordant, in an aqueous solvent and drying the carrier;
(b) impregnating the carrier of (a) with a second solution, having a pH of at least about 7.0, which comprises an enzyme and a peroxidatively active substance in an aqueous solvent and drying the carrier.

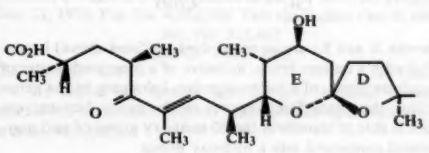
4,361,649

POLYCYCLIC ETHER ANTIBIOTIC

Walter D. Celmer, New London; Walter P. Cullen, East Lyme, both of Conn.; Riichiro Shibakawa, Handa, Japan, and Junsuke Tone, Chita, Japan, assignors to Pfizer Inc., Groton, Conn.

Filed Jul. 20, 1981, Ser. No. 285,264
Int. Cl.³ C12P *17/18;* C12N *1/20;* C12R *1/465*
U.S. Cl. 435—119 **3 Claims**

1. A process for producing the antibiotic of the formula



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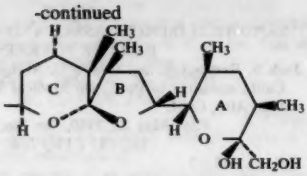


or the pharmaceutically acceptable salts thereof which comprises cultivating the microorganism Streptomyces halstedii ATCC 31812 in aqueous culture media containing an assimilable source of carbon, nitrogen and inorganic salts under submerged aerobic fermentation conditions until a substantial amount of said antibiotic is obtained.

4,361,650

FERMENTATION PROCESS OF PREPARING DEMETHYL MAYTANSINOIDS

Mitsuko Asai, Osaka; Kazuo Nakahama, Kyoto, and Motowo Izawa, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

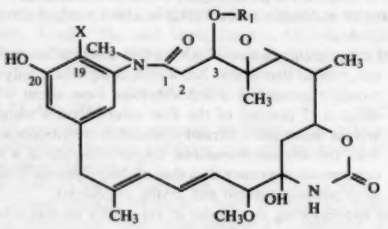
Division of Ser. No. 153,522, May 27, 1980, Pat. No. 4,307,016, which is a continuation-in-part of Ser. No. 19,612, Mar. 12, 1979, abandoned. This application Aug. 7, 1981, Ser. No. 290,943

Claims priority, application Japan, Mar. 24, 1978, 53/34645; Dec. 22, 1978, 53/160787; Sep. 17, 1979, 54/119959; Rep. of Korea, Mar. 12, 1979, 2968(1979)[U]

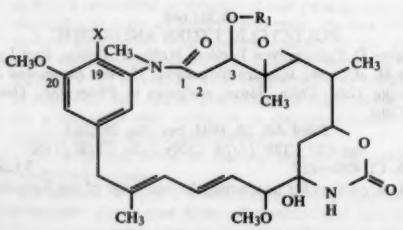
Int. Cl.³ C12P *17/18*

U.S. Cl. 435—119 **8 Claims**

1. A method for producing a demethylmaytansinoid compound of the formula:



(wherein X is Cl or H; R_1 is H or acyl) characterized in that a maytansinoid compound of the formula:



(wherein X and R_1 are as respectively defined above) is contacted with a culture broth, inclusive of a processed matter of the culture broth, of a microorganism belonging to the genus Bacillus, the genus Streptomyces or the genus Actinomyces which is able to transform the 20-methoxy group of said maytansinoid compound into a hydroxy group.

4,361,651

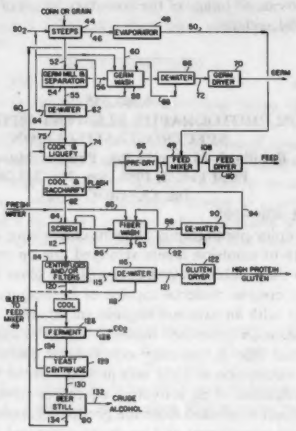
PROCESS FOR MAKING FERMENTABLE SUGARS AND HIGH-PROTEIN PRODUCTS

Carroll R. Keim, 50 Glenbrook Rd., Stamford, Conn. 06902

Filed Jul. 18, 1980, Ser. No. 170,033

Int. Cl.³ C12P *7/06, 19/20*

U.S. Cl. 435—161 **13 Claims**



1. A process for obtaining from carbohydrate-bearing grain high yields of soluble carbohydrates, a protein fraction essentially free of carbohydrates, and ethanol which comprises, in combination, the steps of:

(a) steeping said grain in water for a period of time sufficient only to toughen the hull and germ thereof to facilitate subsequent separation and to form a steepwater;

(b) separating said steepwater from said grain and concentrating said steepwater to produce feedstuff.

(c) degerminating said grain and recovering germ containing oil and minimum amounts of starch and protein leaving a magma containing 75 to 80% by weight of water including minerals, proteins and carbohydrates and insolubles including starch, protein, fiber and fatty materials;

(d) forming a slurry of said magma resulting from step (c) with water;

(e) saccharifying the carbohydrates from said carbohydrate material to produce a sugar solution containing sugars, other water-soluble compounds and suspended coarse and fine insoluble materials;

(f) removing the coarse insolubles from said sugar solution;

(g) removing, washing and drying the fine insolubles comprising principally protein from said sugar solution;

(h) cooling and adding yeast to said sugar solution and fermenting same to produce ethanol;

(i) recovering at least a portion of said yeast from said fermented material in (h) and recycling same for further fermentation;

(j) distilling ethanol from the fermented material;

(k) recycling water remaining after distillation to said solution and to wash said protein.

4,361,652

METHOD FOR STABILIZING PLASMINOGEN

Yahiro Uemura, Hirakata; Katuhiro Uriyu, Sakurai, and Satoshi Funakoshi, Katano, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

Filed Jan. 16, 1981, Ser. No. 225,531

Claims priority, application Japan, Jan. 25, 1980, 55-8072

Int. Cl.³ C12N *9/96, 9/68*

U.S. Cl. 435—188 **3 Claims**

1. In a method for producing a plasminogen preparation

comprising adding a physiologically acceptable inorganic salt to a plasminogen-containing aqueous solution to give a final concentration of the salt of 0.002 to 0.4 M and heat-treating the aqueous solution at 60° C. for 10 hours, the improvement which comprises subjecting the aqueous solution to digestion at 4° to 37° C. at pH 2 to 4 for 2 to 60 minutes before the heat-treatment.

4,361,653

PLASMINOGEN PREPARATIONS

Ryozo Watanabe, Takatsuki, and Mitsuomi Ohgaki, Fukuchiyama, both of Japan, assignors to The Green Cross Corporation, Osaka, Japan

Filed Jan. 16, 1981, Ser. No. 225,532
Claims priority, application Japan, Jul. 3, 1980, 55/91341
Int. Cl.³ C12N *9/96, 9/68*
U.S. Cl. 435—188 **5 Claims**

1. A plasminogen containing at least one member selected from the group consisting of phenylmethanesulfonyl fluoride, aprotinin, and soybean trypsin inhibitor in an effective amount for stabilizing plasminogen.

4,361,654

PORCELAIN ENAMEL FRIT FOR SHEET IRON GROUND COAT

Akira Ohmura, Kasugai, and Tadashi Nakano, Aichi, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Aug. 5, 1981, Ser. No. 290,182
Claims priority, application Japan, Sep. 29, 1980, 55-134213
Int. Cl.³ C03C *7/02, 3/08*
U.S. Cl. 501—21 **2 Claims**

1. A fluorine or fluorine compound free porcelain enamel frit for sheet iron ground coat, consisting of, in parts by weight,

100 parts of a main component consisting of 30–73 parts of SiO_2 or a mixture of SiO_2 and at least one of TiO_2, ZrO_2 and SnO_2, 8–45 parts of B_2O_3, and 8–41 parts of Na_2O or a mixture of Na_2O and at least one of Li_2O and K_2O (provided that, when the total amount of the mixture of Na_2O and at least one of Li_2O and K_2O is assumed to be 100% by weight, the amount of Na_2O is at least 45% by weight, that of Li_2O is not more than 25% by weight and that of K_2O is not more than 50% by weight), and

7–42 parts of an auxiliary component consisting of not more than 12 parts of Al_2O_3, 1–22 parts of at least one of CaO, BaO, ZnO, MgO and SrO (provided that the amount of each oxide is not more than 12 parts), from more than 0 part to 7 parts of MoO_3 or a mixture of MoO_3 and at least one of V_2O_5, P_2O_5 and Sb_2O_3, and 0.5–10 parts of at least one of CoO, NiO, CuO, MnO_2 and Fe_2O_3.

4,361,655

PROCESSABLE SILICONE RUBBER COMPOSITION

Keith A. Tyler, Lincoln, Nebr., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jul. 30, 1981, Ser. No. 288,621
Int. Cl.³ B29H *19/00*
U.S. Cl. 521—47.5 **2 Claims**

1. An improved processing silicone rubber composition composed of 1 to 10 weight percent of vulcanized powdery particulated silicone rubber having an average particle size of less than 20 microns and 99 to 90 weight percent of unvulcanized silicone rubber.

4,361,656

METHOD OF MAKING EXPANDABLE STYRENE-TYPE POLYMER BEADS

Mohamed A. Mostafa, Leominster, Mass., assignor to American Hoechst Corporation, Leominster, Mass.

Continuation-in-part of Ser. No. 289,635, Aug. 3, 1981, abandoned. This application May 3, 1982, Ser. No. 373,948
Int. Cl.³ C08J *9/16*
U.S. Cl. 521—57 **34 Claims**

1. A method of making expandable styrene-type polymer beads wherein the polymer beads are impregnated with a blowing agent in an aqueous suspension medium comprising styrene-type polymer beads, a blowing agent, a suspending agent, at least 0.0001% of a halide salt of a transition metal selected from the group consisting of iron, titanium, vanadium, chromium, manganese, cobalt, nickel and copper, or a mixture thereof, and at least 0.001% of glycerol mono-, di-, or tri-ester of a fatty acid having 12–30 carbon atoms or a mixture thereof, said halide being bromide, chloride or iodide, and said percentages being based on the total weight of polymer beads subjected to the impregnation, with the proviso that if said glycerol ester is a tri-ester, ther must be present at least 0.0001% of a bromide salt of said transition metal or a mixture thereof.

4,361,657

CROSS-LINKED HYDROGEL COPOLYMERS FOR CONTACT LENSES

Ivor B. Atkinson, Chessington, and Barry C. Holdstock, Morden, both of England, assignors to Global Vision (U.K.) Ltd., Hants, England

Filed Nov. 29, 1979, Ser. No. 98,479
Claims priority, application United Kingdom, Nov. 30, 1978, 46681/78
Int. Cl.³ G02C *7/04*
U.S. Cl. 523—106 **6 Claims**

1. A soft contact lens having a water content of at least about 30% by weight based on the weight of the hydrated lens, said lens being characterized by a high tensile strength and composed of a hydrated copolymer comprising units from a major proportion of an hydroxyalkyl acrylate or methacrylate, up to 12% by weight of an ethylenically unsaturated acid or anhydride based on the total weight of comonomers, a minor proportion of a cross-linking monomer, and from about 4 to about 30% by weight of styrene or a substituted styrene, with free acid or anhydride groups in the copolymer being in salt form.

4,361,658

PROCESS FOR POLYMERIC GELATION

Robert D. Lundberg, Bridgewater, N.J.; Dennis E. O'Brien, Katy, Tex.; Henry S. Makowski, deceased, late of Scotch Plains, N.J. (by Patricia H. Makowski, executrix), and Robert R. Klein, Berkeley Heights, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 136,837, Apr. 3, 1980, Pat. No. 4,322,329, which is a continuation-in-part of Ser. No. 106,027, Dec. 21, 1979, Pat. No. 4,282,130. This application Jan. 8, 1981, Ser. No. 223,482
Int. Cl.³ C08F *8/36*
U.S. Cl. 523—132 **14 Claims**

1. An elastic film formed from a water insoluble gel of a neutralized sulfonated polymer, said gel having a viscosity of at least 50,000 cps.

4,361,659

ADHESIVES AND COATING MATERIALS BASED UPON ALKALI METAL SILICATE SOLUTIONS

Wolfgang Friedemann, Neuss, and Bernhard Laut, Erkrath, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed May 20, 1981, Ser. No. 265,639

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1980, 3020864

Int. Cl.³ C08L *25/14*

U.S. Cl. 523—220 **10 Claims**

1. An adhesive composition based upon an aqueous solution of alkali metal silicate with a content of powdered inorganic filler and optionally organic polymer, which comprises:

(a) from about 30 to 80 percent by weight of a sodium and/or potassium silicate solution having a solids content of from about 28 to 48 percent by weight, the sodium silicate solution having a weight ratio of from about 2.6:1 to 3.9:1 for SiO_2/Na_2O and the potassium silicate solution having a weight ratio of from about 2:1 to 2.6:1 for SiO_2/K_2O;

(b) from about 25 to 50 percent by weight of dispersed crystalline calcium carbonate having a particle size of from about 1 to 45 μm;

(c) from about 2 to 10 percent by weight of quartz powder with a particle size of up to about 15 μm and a specific surface area of at least about 3.5 m^2/gm; and

(d) from 0 to 24 percent by weight of a 50 percent by weight stable, aqueous dispersion of an alkali-resistant organic polymer based upon acrylate, styrene/acrylate, styrene/-butadiene or a mixture thereof,

based on the weight of the total composition.

4,361,660

AQUEOUS DISPERSION WITH FINELY DIVIDED, NON IONIC PLASTICS

Hans-Joachim Streitberger; Peter Lessmeister, both of Munich, and Norbert Zdahl, Ascheberg, all of Fed. Rep. of Germany, assignors to BASF Farben & Fasern AG, Hamburg, Fed. Rep. of Germany

Filed May 30, 1980, Ser. No. 154,871

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1979, 2923589

Int. Cl.³ C08L *63/02, 61/14*

U.S. Cl. 523—404 **14 Claims**

1. In an aqueous dispersion consisting of an aqueous solution and/or aqueous dispersion of a reaction product, protonated with acids, from the reaction of (a) Mannich bases which are free from epoxide groups with (b) epoxide resins wherein aliphatic hydroxyl groups originating from (a), (b) or a mixture thereof are at least partially converted into urethane groups by reaction with partially blocked isocyanate, said Mannich bases (a) formed from components selected from:

(a_1) condensed phenols which are free from ether groups and contain at least two aromatic rings and at least two phenolic hydroxyl groups;

(a_2) condensed phenols which contain ether groups and contain at least two aromatic rings and at least two phenolic hydroxyl groups;

(a_5) formaldehyde or compounds which split off formaldehyde; and

(a_3) secondary amines having at least one hydroxyalkyl group or a mixture of a_3 and

(a_4) secondary dialkylamines or dialkoxyalkylamines which do not contain free hydroxyl groups or from the components (a_1) or (a_2) with (a_5) and (a_3) or a mixture of (a_3) and (a_4), the improvement which comprises said dispersion having a pH between 7 and 9 and having dispersed therein finely divided, non ionic plastics selected from the group consisting of epoxide resins, polyester resins, acrylate resins, polyurethane resins, polyamide resins, polyethylene, prolypropylene, cellulose acetobutyrates and mixtures thereof.

4,361,661

THERMAL BACKFILL COMPOSITION METHOD

Kenneth W. Jackson, Gwinnett County, Ga., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed May 22, 1980, Ser. No. 152,254

Int. Cl.³ C08L *63/00, 67/00, 71/00*

U.S. Cl. 523—442 **15 Claims**

1. A thermally conductive composition comprising particulate material selected from sand and sand-like particles coupled with a binder comprising an organic adhesive and an inorganic fine particle size filler, said binder being present in a volume fraction, ϕ_B such that $\phi_f < \phi_B \leqq \phi_c$ wherein ϕ_f is the maximum volume fraction of binder for a film forming structure and ϕ_c is the volume fraction of binder to start to achieve a void filling structure, and said filler is present in the binder in a concentration range sufficient to give rise to a at least a 40% increase in the thermal conductivity of the composition as compared with that without filler.

4,361,662

ORGANIC POLYISOCYANATE-ALKYLENE OXIDE ADHESIVE COMPOSITION FOR PREPARING LIGNOCELLULOSIC COMPOSITE PRODUCTS

James M. Gaul, Exton, and Tinh Nguyen, Chadds Ford, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 9, 1981, Ser. No. 252,640

Int. Cl.³ C08L *97/00, 97/02*

U.S. Cl. 524—14 **26 Claims**

1. An adhesive binder composition for the preparation of compression moldable lignocellulosic articles which comprises an organic di- or polyisocyanate, an alkylene oxide or halogenated alkylene oxide having from 3 to 12 carbon atoms and from 20 to 35 weight percent lignin added as diluent.

4,361,663

PRESSURE SENSITIVE ADHESIVE COMPOSITIONS

Pawan K. Agarwal, Westfield, N.J.; Vincent L. Hughes, Baton Rouge, La., and Robert D. Lundberg, Bridgewater, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 9, 1981, Ser. No. 319,211

Int. Cl.³ C08L *91/08*

U.S. Cl. 524—62 **5 Claims**

1. A solvent based pressure sensitive adhesive composition which comprises:

(a) a hydrogenated block copolymer of polystyrene and a hydrogenated polydiene, said diene being selected from the group consisting of poly-butadiene and polyisoprene;

(b) about 25 to about 250 parts by weight of a hydrocarbon resin of a petroleum or coal tar distillate per 100 parts by weight of said hydrogenated block copolymer;

(c) about 25–200 parts by weight of polybutene or polyisobutylene per 100 parts of said hydrogenated block copolymer; and

(d) a non-reactive solvent, the mixture of said hydrogenated block copolymer, said hydrocarbon resin, and said polyisobutylene or said polybutene being dissolved in a non-reactive solvent at a concentration level of about 5 to about 25 grams per 100 ml/non-reactive solvent.

4,361,664

FLAME-RETARDANT POLYMER COMPOSITIONS

Yuval Halpern, Skokie, Ill., assignor to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Filed Jul. 2, 1981, Ser. No. 279,659

Int. Cl.³ C08K *5/52*

U.S. Cl. 524—118 **11 Claims**

1. A composition comprising a normally flammable polymer selected from the class consisting of olefin polymers and styrenic polymers and a minor proportion, sufficient to impart

flame-retardant properties to said composition, of 5,5-bis(-bromomethyl)-2-hydroxy-2-oxo-1,3,2-dioxaphosphorinane.

4,361,665

HEAT-STABLE VINYL HALIDE RESIN COMPOSITIONS AND A PROCESS FOR THEIR PRODUCTION

Robert S. Miller, Bridgewater, N.J.; Samuel Hoch, Brooklyn, and Mario Q. Ceprini, Cedarhurst, both of N.Y., assignors to Tenneco Chemicals, Inc., Piscataway, N.J.

Filed Jun. 15, 1981, Ser. No. 273,840

The portion of the term of this patent subsequent to Jun. 22, 1999, has been disclaimed.

Int. Cl.³ C08K *5/59*

U.S. Cl. 524—289 **6 Claims**

1. In the process for the production of heat-stable vinyl halide resin compositions wherein from 0.2% to 5% by weight of a liquid antimony stabilizer that consists essentially of

(A) a liquid antimony compound selected from the group consisting of

(1) antimony mercaptoacid esters having the formula $Sb(SRCOOR')_3$;

(2) antimony mercaptides having the formula $Sb(SR')_3$;

(3) antimony (mercaptoacid ester) (mercaptides) having the formula $(R'S)_nSb(SRCOOR')_{3-n}$;

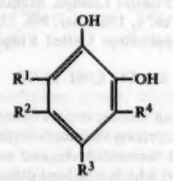
(4) Bis(antimony di-(mercaptoacid ester)) alkylene glycol dimercaptoacid esters having the formula $(R'OOCRS)_2$-Sb-S-$(CH_2)_m$-COO-$(CH_2)_p$-OOC-$(CH_2)_m$-S-Sb-$(SRCOOR')_2$;

(5) Bis(antimony di-(mercaptide or mercaptoacid ester) sulfides having the formula $(R''S)_2$-Sb-S-Sb-$(SR'')_2$;

(6) antimony carboxylates having the formula $Sb(OOCR''')_3$; and

(7) mixtures thereof, and

(B) 1% to 40% by weight of an acidic organic compound selected from the group consisting of mercaptoacid esters of the formula HSRCOOR', mercaptans of the formula HSR', mercaptoacids of the formula HS-$(CR^o_2)_n$-COOH, mercaptoalcohols of the formula HS-$(CR^o_2)_n$-CH_2OH, monocarboxylic acids of the formula R'''COOH, and mixtures thereof, wherein R represents alkylene, arylene, aralkylene, or alkarylene having 1 to 8 carbon atoms; R' represents alkyl, aryl, alkaryl, or aralkyl having 2 to 18 carbon atoms; R'' represents —RCOOR' or alkyl, aryl, alkaryl, or aralkyl having 2 to 18 carbon atoms; R''' represents alkyl having 6 to 11 carbon atoms or phenyl; R^o represents R' or H; m is 1, 2, 3, or 4; n is 1 or 2; and p is 2, 3, or 4, is incorporated into a vinyl halide resin composition, the improvement wherein the vinyl halide resin in said composition is the product obtained by polymerizing a monomer component selected from the group consisting of vinyl halides and mixtures of a vinyl halide with at least one ethylenically-unsaturated monomer that is copolymerizable therewith in an aqueous medium at a temperature in the range of 40° to 80° C. in the presence of a free radical generating initiator and from 0.01% to 0.10%, based on the weight of the monomer component, of a chain-terminating agent that is a dihydric phenol having the structural formula



wherein R^1, R^2, R^3, and R^4 each represents hydrogen or an alkyl group having 1 to 12 carbon atoms, said chain-terminating agent being added to the polymerization mixture when from 70% to 95% of the monomer component has been converted to polymer.

4,361,666

STYRENIC POLYMER ADDITIVE

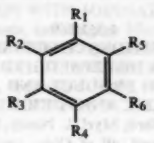
Daniel L. Dufour, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 4, 1982, Ser. No. 336,747

Int. Cl.³ C08L *35/06*

U.S. Cl. 524—295 **6 Claims**

1. A polymer composition comprising a copolymer of a vinyl aromatic monomer and an ethylenically unsaturated dicarboxylic acid anhydride and minor proportion of a ester having the formula:



wherein from 1 to 4 of R_1, R_2, R_3, R_4, R_5 and R_6 are —COOR groups in which R is a substituted or unsubstituted alkyl group having from 10 to 24 carbon atoms, and the remainder are selected from hydrogen, alkyl, chlorine and bromine, said ester having a melting point of at least 50° C.

4,361,667

POLY(PARABANIC ACID) FILMS HAVING IMPROVED FLAMMABILITY RESISTANCE BY THE ADDITION OF COPPER CHELATES AND ORGANO HALIDES

Burnett H. Johnson, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 20, 1980, Ser. No. 198,329

Int. Cl.³ C08K *5/42, 5/13*

U.S. Cl. 524—327 **9 Claims**

1. A composition of matter comprising about 1 mil to 5 mil thick film of poly[1,4-phenylenemethylene-1,4-phenylene-1,3-(imidazolidine-2,4,5-trione)] containing therein from about 2 to 10 weight percent of a polybrominated aromatic compound flame retardant which is one of hexabromobiphenyl, octabromodiphenyl ether, octabromobiphenyl or a mixture thereof and an amount of a copper chelate of a 2-hydroxybenzophenone sufficient to enhance the flame retardant properties of said polybrominated aromatic compound in said polymer film.

4,361,668

POLMERS HAVING REDUCED CARBON MONOXIDE GENERATION UPON BURNING

David F. Lawson, Uniontown, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 31, 1981, Ser. No. 249,515

Int. Cl.³ C08K *5/09*

U.S. Cl. 524—398 **8 Claims**

1. A polymeric composition, comprising:

a nitrogen-free polymer, said polymer selected from the group consisting of an elastomer, a thermoplastic, a thermoplastic elastomer, a thermoset, and combinations thereof;

the polymeric composition containing an alkaline earth metal salt, the amount of said alkaline earth metal salt ranging from about 25 parts to about 400 parts by weight per 100 parts of said nitrogen-free polymer;

wherein said alkaline earth metal salt has a cation selected from the group consisting of berylium, magnesium, calcium, strontium, barium, and combinations thereof, and wherein said salt has an anion portion selected from the group consisting of a hydroxyl, an oxide, and combinations thereof;

said polymeric composition containing a catalyst, said catalyst selected from the group consisting of iron acetate, iron propionate, iron octoate, iron stearate, iron oleate, iron laurate, iron fumarate, iron citrate, iron tartate, cobalt acetate, cobalt propionate, cobalt octoate, cobalt stearate, cobalt laurate, cobalt naphthanate, manganese acetate, manganese octoate, manganese, stearate, manganese laurate, manganese oleate, iron carbonate, cobalt carbonate, manganese carbonate, and combinations thereof;

wherein the amount of said catalysts ranges from about 0.1 to about 10 parts by weight per 100 parts of said polymer; and

wherein said polymeric composition has reduced carbon monoxide generation upon burning.

4,361,669

COATING COMPOSITIONS COMPRISING A REACTION PRODUCT OF A DISPERSED HYDROXY-ALKYL MODIFIED STARCH PRODUCT AND A HYDROLYZED STYRENE MALEIC ANHYDRIDE COPOLYMER

Wilbur G. Evans, Oxford; Myrl A. Nisely, Hamilton, and Paul D. Harper, Cincinnati, all of Ohio, assignors to Champion International Corporation, Stamford, Conn.

Filed Aug. 17, 1981, Ser. No. 293,444

Int. Cl.³ C08L *35/06*

U.S. Cl. 524—424 **12 Claims**

1. An ammonium salt of a reaction product, in an aqueous medium, of a hydrolyzed styrene-maleic anhydride copolymer and a dispersed hydroxy-alkyl-modified starch.

4,361,670

QUICK SETTING WATER-COMPATIBLE FURFURYL ALCOHOL POLYMER CONCRETES

Toshifumi Sugama, Ridge; Lawrence E. Kukacka, Port Jefferson, and William H. Horn, Brookhaven, all of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 5, 1981, Ser. No. 260,623

Int. Cl.³ C08L *37/00*

U.S. Cl. 524—811 **11 Claims**

1. A quick setting, water-compatible polymer concrete composition comprising about 8–20% by weight of a furfuryl alcohol monomer, 78–92% of an aggregate system having a maximum pH of about 8 containing filler and 0–8% by weight water, about 1–10% trichlorotoluene based on the weight of said monomer, and about 20–80% metal salt, selected from the class consisting of $SnCl_4$, $ZnCl_2$ and $AlCl_3$, based on the weight of said monomer, to initiate and promote polymerization within one hour at a temperature within the range of −20° C. to 40° C., in the production of a polymer concrete having a one hour compressive strength greater than 2000 psi.

4,361,671

NOVEL COMPOSITION AND PROCESS FOR PRODUCING SOLID RESIN THEREFROM

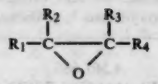
Johann G. Schulz, Pittsburgh, and Daniel Margosian, Verona, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Aug. 6, 1981, Ser. No. 290,663

Int. Cl.³ C08G *63/42*

U.S. Cl. 524—879 **43 Claims**

1. A novel composition of matter capable of being cured to a solid resinous material obtained as a result of the reaction of (1) a coal derivative comprising a mixture of monocyclic, polycyclic, multi-functional carboxylic acids resulting from the interaction of coal with nitric acid with (2) an oxirane defined by the following formula:



wherein R_1, R_2, R_3 and R_4, the same or different, can be hydrogen or an alkyl group having from one to 10 carbon atoms.

4,361,672

HOT MELT ADHESIVE COMPOSITIONS

Pawan K. Agarwal, Westfield, N.J.; Vincent L. Hughes, Baton Rouge, La., and Robert D. Lundberg, Bridgewater, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 9, 1981, Ser. No. 319,700

Int. Cl.³ C08G *18/00*

U.S. Cl. 525—54.5 **3 Claims**

1. A hot melt adhesive composition which comprises:

(a) a hydrogenated block copolymer of polystyrene and a hydrogenated polydiene, said diene being selected from the group consisting of polybutadiene and polyisoprene;

(b) about 25 to about 250 parts by weight of a hydrocarbon resin of a petroleum or coal tar distillate per 100 parts by weight of said hydrogenated block copolymer; and

(c) about 25–200 parts by weight of polybutene or polyisobutylene per 100 parts of said hydrogenated block copolymer.

4,361,673

POLYPEPTIDE COMPOSITIONS

William H. McGregor, Malvern, Pa., assignor to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 188,804, Sep. 19, 1980, abandoned. This application Jul. 27, 1981, Ser. No. 286,138

Int. Cl.³ C07C *103/52*; A61K *37/00*

U.S. Cl. 525—54.11 **9 Claims**

1. A polypeptide having the following formula:

R_1-lys-Lys-X-R_2

wherein R_1 is hydrogen or p-Glu; X is Glu or Asp; and R_2 is Val, NH_2 or Val-NH_2; the fully protected peptide-resin intermediates thereof, and pharmaceutically acceptable salts thereof.

4,361,674

AMINO FIBRES

Carl Lawrence, Hebden Bridge; Alan J. Hall, Rochdale, and George Inverarity, Kingswinford, all of England, assignors to British Industrial Plastics Limited, Manchester, England

Filed Feb. 6, 1981, Ser. No. 232,218

Claims priority, application United Kingdom, Feb. 9, 1980, 8004423

Int. Cl.³ C08L *61/28*

U.S. Cl. 525—58 **11 Claims**

1. A fibre consisting at least in part of a cationic amino-formaldehyde resin comprising the reaction product of a triazine, optionally urea, and formaldehyde, and to render said resin cationic, a compound which is at least difunctional, contains a quarternizable nitrogen atom and can be reacted into the resin together with a carrier material which is of a water-soluble fibre-forming polymer.

4,361,675

COMPATIBLE POLYSTYRENE BLENDS

King-Han Tan, Alkmaar, and Jan L. de Greef, Amsterdam, both of Netherlands, assignors to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 163,544, Jun. 27, 1980, abandoned, which is a continuation of Ser. No. 66,718, Aug. 15, 1979, abandoned. This application Mar. 2, 1981, Ser. No. 239,273

Int. Cl.[3] C08L *51/04, 55/02, 53/02*

U.S. Cl. 525—71 7 Claims

1. A blend of polymers consisting essentially (1) from about 30 to about 80 parts of a block copolymer of styrene and a conjugated diolefin of 4–6 carbon atoms, (2) from about 10 to about 40 parts of a graft copolymer wherein a copolymer of styrene and up to 40 parts, based on the weight of a graft copolymer, of acrylonitrile and/or methyl methacrylate is grafted onto a rubbery substrate which is polybutadiene or a copolymer of butadiene and styrene, and (3) from about 10 to about 40 parts of polystyrene.

4,361,676

SAG-RESISTANT COMPOSITIONS

Jon H. Simpson, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 783,350, Mar. 31, 1977, Pat. No. 4,243,768. This application Dec. 26, 1979, Ser. No. 107,376

Int. Cl.[3] C08L *63/02*

U.S. Cl. 525—118 22 Claims

1. A sag-resistant, pumpable composition comprising a liquid material dispersed throughout a synthetic, continuous crosslinked polymer matrix, wherein said liquid material is selected from (a) liquid polymerizable materials, and (b) liquid polymer-containing materials.

4,361,677

CURABLE COMPOSITION FOR HARD RUBBER AND THE USE THEREOF

Hiroshi Furukawa, Kobe, and Takehiko Tsuyuri, Ashiya, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

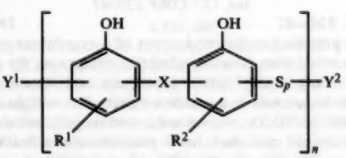
Division of Ser. No. 158,314, Jun. 10, 1980, Pat. No. 4,285,381. This application Apr. 29, 1981, Ser. No. 230,046

Claims priority, application Japan, Jun. 18, 1979, 54-77179

Int. Cl.[3] C09L *7/00, 9/00, 9/02, 9/06*

U.S. Cl. 525—133 6 Claims

1. A curable composition comprising (1) at least one rubber selected from the group consisting of natural rubber, a diene rubber and a diene copolymer rubber, (2) 0.1 to 10 parts by weight per 100 parts by weight of the rubber of a sulfide resin as a curing agent having the following general formula:



wherein X is methylene group, ethylene group, —S— or —S—S—, R^1 and R^2 are independently a C_{1-10} alkyl or alkylene group, Y^1 and Y^2 are independently the residue of a phenol compound, p is an integer of 2 to 8, and n is an integer of 2 to 5, (3) 5 to 40 parts by weight per 100 parts by weight of the rubber of a phenolic thermosetting resin and (4) 0.5 to 6 parts by weight per 100 parts by weight of the rubber of a hardener for hardening said thermosetting resin, said hardener being a combination of an oxazolidine derivative of the formula:

with another hardener suitable for hardening said thermosetting resin wherein said oxazolidine derivative is present in a ratio of oxazolidine derivative to said another hardener of at least 1:2.

4,361,678

LIQUID FLUORINE-CONTAINING POLYMER AND ITS PRODUCTION WITH IODINATED COMPOUND

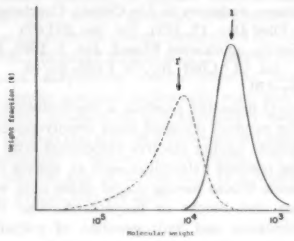
Masayoshi Tatemoto, and Shigeru Morita, both of Osaka, Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Oct. 17, 1980, Ser. No. 198,221

Claims priority, application Japan, Oct. 17, 1979, 54-134476

Int. Cl.[3] C08F *14/16, 14/22, 259/08*

U.S. Cl. 528—374 15 Claims



1. A process for producing a readily crosslinkable liquid fluorine-containing polymer having a number average molecular weight of 900 to 10,000 and containing iodine in the molecule in an amount of 1 to 30% by weight based on the weight of the polymer, which comprises polymerizing vinylidene fluoride and at least one other fluoroolefin in the presence of a radical-producing source and an iodinated compound of the formula RfI_x, wherein Rf is selected from at least one member of the group consisting of a saturated perfluorocarbon group, a saturated perfluorochlorocarbon group or a saturated fluorochlorohydrocarbon group and x is an integer of not less than 1 corresponding to the bonding valency of Rf while maintaining the proportion of the mole number of the monomeric components (M) to the mole number of the iodinated compound (I) in a range between 10 and 1,200.

4,361,679

PROCESS FOR PRODUCING HEAT-RESISTANT AND MOISTURE-RESISTANT POLYBOROMETALLOSILOXANES

Seishi Yajima, Tohokudaigaku shukusha 4-2, 843, Ohnukimachi, Oharai-machi, Higashiibaraki-gun, Ibaraki-ken, Japan; Kiyohito Okamura, and Toetsu Shishido, both of Oharai, Japan, assignors to NTN Toyo Bearing Co., Ltd., Osaka and Seishi Yajima, Ibaraki, both of, Japan

Filed Jun. 30, 1981, Ser. No. 278,929

Int. Cl.[3] C08G *77/04, 77/56*

U.S. Cl. 525—389 4 Claims

1. A process for producing a heat-resistant and moisture-resistant polyborometallosiloxane, which comprises adding

(1) a phosphorus or metal compound which compound is selected from the group consisting of salts which are halides, oxyhalides, sulfates, oxysulfates, oxalates and oxyoxalates; alkali metal and ammonium salts of said salts; and acetylacetone complexes; and

(2) a compound capable of easily forming a complex with the phosphorus or metal compound, said compound capable of easily forming a complex being selected from the group consisting of ethers, monohydric and polyhydric alcohols, ketones, phenols, heterocyclic compounds containing oxygen as a hetero atom, and chain and cyclic compounds having quinonic oxygen, an aldehyde group, or a carboxyl group in the side chain; to

(3) an organoborosiloxane, being a monomer, oligomer or polymer whose main chain consists mainly of B, Si and O elements;

the metal in said metal compound being at least one member selected from the group consisting of Ti, Zr, V, Al, Fe, Cr, Co, Ni, Ge, Sn, As, Mg, Pb and Sb; and heating the resulting mixture to a temperature of 550° C. or lower to bond the phosphorus or metal atom to the silicon atom and/or the boron atom through an oxygen atom.

4,361,680

BLOCK COPOLYETHERAMIDES-BASED THERMOFUSIBLE ADHESIVE COMPOSITIONS

Patrick Borg, Beaumontel, and Gerard Deleens, Beaumesnil, both of France, assignors to Ato Chimie, Courbevoie, France

Filed Dec. 17, 1981, Ser. No. 331,691

Claims priority, application France, Jan. 5, 1981, 81 00035

Int. Cl.³ C08F *283/04;* C08G *69/48*

U.S. Cl. 525—420 **11 Claims**

1. As a novel industrial product, a thermofusible adhesive, formed of the product obtained from copolycondensation of polyamide blocks having reactive extremities with polyether blocks having reactive extremities such as, among others:

(a) polyamide blocks having diacid chain ends with either polyether diol blocks or polyetherdiamine blocks (by cyanoethylation and hydrogenation of polyether diols) having a molecular weight comprised between 300 and 15.000);

(b) polyamide blocks having diamine chain ends with polyether blocks having carboxylic chain ends with a molecular weight of 100 to 6000;

4,361,681

POLYETHYLENE TEREPHTHALATE HAVING A REDUCED ACETALDEHYDE GENERATION RATE

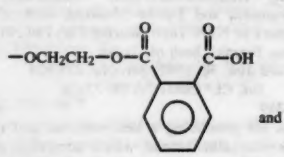
John C. Bernhardt, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 3, 1980, Ser. No. 203,095

Int. Cl.³ C08G *63/18, 63/16*

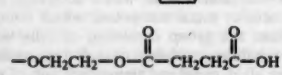
U.S. Cl. 525—444 **11 Claims**

1. A high molecular weight polyethylene terephthalate polyester composition having an intrinsic viscosity of at least 0.4 deciliters per gram as determined in a 60/40 phenol/tetrachloroethane mixed solvent; said composition comprising a plurality of polyester chains, a substantial number of said chains having at least one end group corresponding to a formula selected from the group consisting of



(1)

and



(2)

4,361,682

PROCESS FOR PREPARING BIMODAL OR MULTIMODAL POLYMERS OF CONJUGATED DIENES

Christian Freppel, Chamalieres, France, assignor to Compagnie Generale Des Etablissements Michelin, Clermont-Ferrand, France

Filed Apr. 6, 1981, Ser. No. 251,977

Claims priority, application France, Apr. 9, 1980, 80 08109

Int. Cl.³ C08F *4/08*

U.S. Cl. 526—66 **4 Claims**

1. A process of preparing a bimodal or multimodal homopolymer of a conjugated diene or a bimodal or multimodal copolymer of a conjugated diene with another conjugated diene or with a vinyl aromatic compound, consisting in polymerizing the monomer(s) in a reaction medium at a temperature of between 20° C. and 200° C. in the presence of a catalyst system comprising an organolithium initiator, a barium, strontium or calcium compound, and an organometallic compound of a metal of group 2B or 3A of the periodic classification of elements of the Mendeleev Table,

characterized by

adding hydrogen as a modifying agent to the reaction medium during the course of the polymerization reaction.

4,361,683

TERMINATION OF VINYL HALIDE POLYMERIZATION

John R. Dodd, and Dean R. Weimer, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed May 26, 1981, Ser. No. 267,125

Int. Cl.³ C08F *2/42*

U.S. Cl. 526—84 **14 Claims**

1. An improvement in the method of terminating the polymerization of vinyl halide-containing polymers, wherein the improvement comprises:

injecting a free radical inhibitor, obtained by the alkylation of P-methoxyphenol with nonene, into the polymerization reactor when the level of conversion of monomer to polymer is in the range of 75 to 90%, said inhibitor being injected in an effective amount in the range of about 0.01 to about 0.10 parts per hundred parts of monomer.

4,361,684

PROCESS FOR PREPARING COPOLYMERS COMPRISING α-ALKYL STYRENE AND UNSATURATED NITRILE

Hiroyuki Minematsu, Niihama; Kojiro Matsumoto, Takarazuka; Tadashi Saeki, and Akira Kishi, both of Niihama, all of Japan, assignors to Sumitomo Naugatuck Co., Ltd., Osaka, Japan

Filed Jun. 5, 1981, Ser. No. 270,879

Claims priority, application Japan, Jun. 5, 1980, 55-76025; May 2, 1981, 56-67537

Int. Cl.³ C08F *220/44*

U.S. Cl. 526—87 **19 Claims**

1. A process for the production of a copolymer of an α-alkylstyrene and an unsaturated nitrile, comprising the steps of:

introducing α-alkylstyrene monomers and unsaturated nitrile monomers in a reaction system in a weight ratio of 70:30 to 80:20, respectively, and copolymerizing said introduced monomers in the presence of a radical initiator in such a manner that the concentration of unreacted unsaturated nitrile in the reaction system is not less than 31% by weight of the entire amount of unreacted monomers in the reaction system at the completion of introducing the monomers into the system; and

after the completion of introducing the monomers into the reaction system, further polymerizing the monomers to produce a copolymer comprising α-alkylstyrene and unsaturated nitrile monomers in a weight ratio of 70:30 to 80:20, wherein the produced copolymer has excellent

thermal resistance and has 1% by weight or less of unreacted monomers at completion of polymerization.

4,361,685

POLYMERIZATION OF OLEFINS IN THE PRESENCE OF CATALYST PREPARED FROM ORGANO ZIRCONIUM-CHROMIUM MIXTURES

Randall S. Shipley, Alvin, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 1, 1981, Ser. No. 269,222

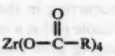
Int. Cl.³ C08F *4/02, 10/00*

U.S. Cl. 526—114 **19 Claims**

1. A process for polymerizing one or more α-olefins which comprises conducting said polymerization under Ziegler polymerization conditions in the presence of a catalyst which comprises

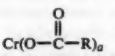
(A) at least one member of the group consisting of

(1) at least one zirconium compound, represented by the empirical formula



wherein R is a hydrocarbon group having from 1 to about 12 carbon atoms;

(2) at least one hydrocarbon soluble chromium compound represented by the empirical formula



wherein R is a hydrocarbon group having from 1 to about 12 carbon atoms and a has a value equal to the valence of Cr; and

(3) a mixture of components (1) and (2) in a mole ratio of component (2) to component (1) of from about 0.05:1 to about 10:1;

(B) a solid catalyst support containing magnesium prepared by reacting (a) a compound represented by the empirical formula $MgR''_2.xAlR''_3$ wherein each R'' is independently a hydrocarbyl or hydrocarbyloxy group having from 1 to about 20 carbon atoms and x has a value from about zero to about 10 with (b) a halide source selected from nonmetallic halides and metallic halides;

(C) a tetrahydrocarbyloxy titanium or titanium halide compound; and

(D) an organometallic activating agent; wherein the Mg:(Cr+Zr) atomic ratio is from about 1:1 to about 100:1; the Al:(Cr+Zr) atomic ratio is from about 1:1 to about 200:1; the (Cr+Zr):Ti atomic ratio is from about 0.5:1 to about 20:1; and the excess X:Al atomic ratio is from about 0.0005:1 to about 5:1.

4,361,686

PREPARATION OF COPOLYMERS OF ETHYLENE WITH AT LEAST ONE OTHER 1-MONOOLEFIN AND AN OPTIONAL UNCONJUGATED DIENE

Wolfgang Zaar; Manfred Schröeder, and Gunther Maahs, all of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huels, Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Aug. 21, 1980, Ser. No. 180,204

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1979, 2933885

Int. Cl.³ C08F *4/68, 210/18*

U.S. Cl. 526—143 **6 Claims**

1. A process for preparing a copolymer by copolymerizing ethylene and at least one other 1-monoolefin and, optionally, an unconjugated diene in the presence of a mixed catalyst of (1) an alkyl aluminum halide of the formula AlR'_nX_{3-n} wherein X is chlorine or bromine, R' is alkyl of up to 6 carbon atoms, and n is a number from 1 to 2 inclusive, and (2) a vanadium compound soluble in organic solvents employable in the copolymerization, which comprises performing the copolymerization in the presence of an amount effective as an activator of a 2,3,4,4-tetrachloro-2-butenoic acid ester of the formula $HCCl_2—CCl=CCl—COOR$ wherein R is a non-halogenated alkyl group.

4,361,687

METHOD FOR THE POLYMERIZATION OF WATER SOLUBLE MONOMERS

Peter J. Arndt, Jugenheim-Seeheim; Klaus Ross, and Franz Wenzel, both of Darmstadt, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Aug. 28, 1981, Ser. No. 297,100

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1980, 3037967

Int. Cl.³ C08L *33/26, 33/14*

U.S. Cl. 524—850 **5 Claims**

1. A method for making a water soluble polymer of low molecular weight which forms aqueous solutions of low viscosity, which method comprises polymerizing an α,β-unsaturated water soluble monomer or a mixture of such monomers selected from the group consisting of acrylic acid, methacrylic acid, the water soluble salts of acrylic acid and methacrylic acid, acrylamide, methacrylamide, the aminoalkyl esters of acrylic acid and methacrylic acid, and the salts and quaternization products of said aminoalkyl esters of acrylic acid and methacrylic acid, in a concentrated aqueous solution of said monomer or mixture in the presence of a free radical forming initiator and of formic acid or a water soluble salt thereof as a chain transfer agent.

4,361,688

DI(2-METHYL-2-PHENYL PROPYL) PEROXY DICARBONATE AND OTHER NOVEL (2-ALKYL-2-PHENYL) SUBSTITUTED PEROXY DICARBONATES

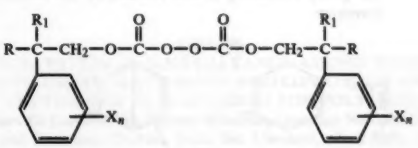
Reidar Halle, Novato, and David Peterson, Hercules, both of Calif., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Division of Ser. No. 112,872, Jan. 17, 1980, Pat. No. 4,285,877. This application Apr. 20, 1981, Ser. No. 255,520

Int. Cl.³ C08F *4/34*

U.S. Cl. 526—230.5 **12 Claims**

1. In the polymerization of a monomer mass containing a monomer selected from ethylene, styrene, methylmethacrylate and vinyl chloride by subjecting said mass to polymerization conditions in the presence of an initiating amount of an organic peoxide, the improvement in which said organic peroxide includes a peroxydicarbonate of the formula:



wherein:

each of R and R_1 is lower alkyl of from 1 to 4 carbon atoms;

n is 0 to 3; and

X is selected from the group consisting of lower alkyl of from 1 to 4 carbon atoms, halogen, and lower alkoxy of from 1 to 4 carbon atoms.

4,361,689

CROSS-LINKED HYDROPHILIC POLYMERS

Pravin G. Patel, 44, Lockington Crescent, Dunstable, Bedfordshire, England LU5 45U, and Nicholas M. Da Costa, 99, Leafields, Houghton Regis, Bedfordshire, England

Continuation-in-part of Ser. No. 89,906, Oct. 31, 1979, abandoned. This application Dec. 18, 1980, Ser. No. 218,633
Claims priority, application United Kingdom, Nov. 4, 1980, 8035366
Int. Cl.³ C08F *26/10*
U.S. Cl. 526—264 6 Claims

1. A cross-linked hydrophilic polymer capable of absorbing water to give a clear hydrated polymer containing about 63 to 90% by weight of water and having a tensile strength of at least 10 g./mm^2, the tensile strength being at least (154-1.6x) g./mm^2 where x is the water content as a percentage by weight and the permeability to oxygen and tensile strength of the said hydrated polymer being sufficient for forming contact lenses therefrom, the said polymer comprising hydrophilic units of N-vinyl-2-pyrrolidone and 0. to 30% by weight of the N-vinyl-2-pyrrolidone of 2-hydroxyethyl or 2-hydroxypropyl acrylate or methacrylate and hydrophobic units of a cycloalkyl acrylate, methacrylate or itaconate, the said cycloalkyl containing 5 to 7 ring carbon atoms and being unsubstituted or substituted by alkyl of 1 to 4 carbon atoms, in relative proportions of the said hydrophobic units to the said hydrophilic units by weight from about 86:14 to 97:3; and 0 to 50% by weight of the N-vinyl-2-pyrrolidone, of units of one or more alkyl or alkoxyalkyl acrylates, methacrylates, maleates, fumarates, or itaconates, the said alkyl or alkoxyalkyl having up to 7 carbon atoms in a straight or branched chain; and units of a copolymerisable cross-linking agent in a proportion of 0.2 to 0.8 parts per 100 parts by weight of the other monomers, the said proportion being sufficient to confer adequate tensile strength and clarity on the hydrated polymer.

4,361,690

NOVEL IMIDO/HYDROXYLATE ORGANOSILICON COPOLYMERS

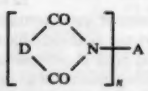
Jena-Louis Locatelli, Vienne, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Jul. 1, 1980, Ser. No. 164,901
Claims priority, application France, Jul. 3, 1979, 7917213
Int. Cl.³ C08G *77/06*
U.S. Cl. 528—21 29 Claims

1. A process for the preparation of an imido copolymer comprising reacting

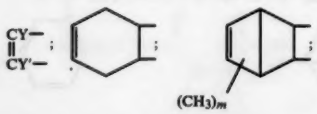
(i) an imido monomer selected from the group consisting of:

(ia) an oligoimide having the structural formula:



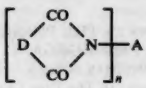
(I)

in which D represents a divalent radical selected from the group consisting of the radicals of the structural formulae:



in which Y and Y', which are identical or different, each represent H, CH_3 or CL and m is equal to 0 or 1, the symbol A represents an organic radical of valency n, which contains up to 50 carbon atoms, and n represents a number equal to at least 1.5 and equal to at most 5;

(ib) a mixture of an oligoimide having the structural formula (I):



(I)

in which D, A and n are as defined above, with a polyamine of the structural formula (II):

$$G(NH_2)_z \qquad \text{(II)}$$

in which G is an organic radical of valency z and z is an integer equal to at least 2; and

(ic) the product of reaction between said oligoimide (I) and said polyamine (II); and

(ii) an organosilicon comonomer comprising at least one hydroxyl group directly bonded to a silicon atom thereof,

with said reacting occurring in the presence of a catalytic amount of an imidazole (iii) at a temperature ranging from about 50° C. to ranging from about 50° C. to 300° C. 300° C.

4,361,691

PROCESS FOR PRODUCTION OF HEAT-RESISTANT COMPOUNDS

Seishi Yajima, Tohokudaigaku shukusha 4-2, 843, Ohnuki-machi, Oharai-machi, Higashiibaraki-gun, Ibaraki-ken, Japan; Kiyohito Okamura, and Toetsu Shishido, both of Oharai, Japan, assignors to NTN Toyo Bearing Co., Ltd., Osaka and Seishi Yajima, Ibaraki, both of, Japan

Filed May 5, 1981, Ser. No. 260,570
Claims priority, application Japan, May 13, 1980, 55-62215
Int. Cl.³ C08G *77/04*
U.S. Cl. 528—28 5 Claims

1. A process for producing a heat-resistant compound, which comprises adding a diamine to an organic solvent-soluble metallosiloxane compound whose main chain consists of siloxane bonds -(-Si—O-)- and metalloxane bonds -(-M—O-)- wherein M represents at least one element selected from the group consisting of Ti, Zr, and Al, and heating the mixture to 50° to 450° C. in the presence or absence of an organic solvent.

4,361,692

EXTENDED POT LIFE POLYURETHANE

Vernon G. Ammons, Glenshaw, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 173,785, Jul. 30, 1980, abandoned. This application Sep. 23, 1981, Ser. No. 304,777
Int. Cl.³ C08G *18/30, 18/08*
U.S. Cl. 528—51 10 Claims

1. A polyurethane reaction mixture consisting essentially of an organic polyisocyanate, a substantially equivalent amount of an organic compound having at least two isocyanate reactive hydrogen moieties, a tetrabutyl titanate catalyst, and a sufficient amount of an organic phosphorus acid compound to extend the pot life of said reaction mixture at typical processing and handling temperatures without substantially affecting its cure at higher temperatures.

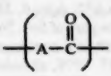
4,361,693

PREPARATION OF POLY(ARYLENE KETONES) USING THIO- AND DITHIOCARBONIC ACID DERIVATIVES

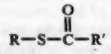
Viktors Jansons, Los Gatos, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Jul. 8, 1981, Ser. No. 281,528
Int. Cl.[3] C08G 65/38, 65/40
U.S. Cl. 528—86 17 Claims

1. A method of preparing a polymer having the repeating unit



which comprises reacting a nucleophilic aromatic compound of the formula H-A-H wherein A is an aromatic diradical and each H is displaceable under Friedel-Crafts acylation conditions, with a carbonic acid derivative of the formula



wherein R is a radical having a low tendency to form a carbonium ion and R′ is an atom or group which is displaceable under Friedel-Crafts acylation conditions, in the presence of a superacid catalyst system consisting essentially of a mixture of at least an equimolar amount, based on said aromatic compound, of an inorganic halide Lewis acid selected from the group consisting of boron trifluoride, boron trichloride, boron tribromide, titanium tetrafluoride, titanium tetrachloride, titanium tetrabromide and the pentafluorides, pentachlorides or pentabromides of tantalum, niobium, phosphorus, arsenic and antimony, and a molar excess, based on said Lewis acid, of a strong acid selected from the group consisting of fluorosulfuric acid, hydrofluoric acid, and trifluoromethanesulfonic acid.

4,361,694

COORDINATION COMPLEXES AS POLYESTERIFICATION CATALYSTS

Kurt Weinberg, Upper Saddle River, N.J., and Gordon C. Johnson, Armonk, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

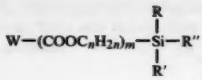
Filed Dec. 31, 1981, Ser. No. 336,317
Int. Cl.[3] C08G 63/34
U.S. Cl. 528—279 17 Claims

1. In a process for the manufacture of solid fiber-forming polyesters or copolyesters of dicarboxylic acid compounds and aliphatic glycols in the presence of catalysts, the improvement which comprises using as a polyesterification catalyst a coordination complex of (A) and (B), wherein:

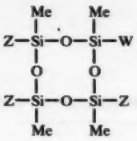
(A) is a metal alkoxy halide selected from the group consisting of

wherein M is at least one of titanium, zinc, germanium, tin, lead, antimony and; R is alkyl, aryl, alkylaryl, arylalkyl, haloalkyl having from 1 to 20 carbon atoms; a and b are integers having a value of from 1 to 3; the sum of (a+b) is equal to or less than the integer 4; x is at least one of F, Cl, Br or I; with the proviso that when M is antimony a is an integer having a value of from 1 tc 4 and the sum (a+b) is equal to or less than 5;

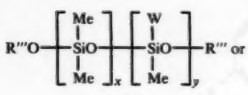
(B) is a silicon compound selected from the group consisting of:



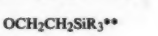
(I)



(II)



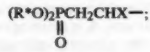
(III)



(IV)

wherein

W is $CH_2{=}CX-$ or



X is hydrogen or methyl and is methyl only when m is one;

R* is alkyl or haloalkyl having from 1 to 4 carbon atoms;

R** is is methyl, ethyl, butyl, acetoxy, methoxy, ethoxy or butoxy;

R is methyl, ethyl, butyl, methoxy, ethoxy, butoxy, or trimethylsiloxy;

R′ is methyl, methoxy, ethoxy, butoxy or trimethylsiloxy;

R″ is methoxy, ethoxy, butoxy, trimethylsiloxy or vinyldimethylsiloxy;

R‴ is methyl, ethyl, butyl or trimethylsilyl;

Me is methyl;

Z is methyl or W;

Q is an $NCCH_2-$, $NH_2CH_2NHCH_2-$, NC—HS— or $HSCH_2CH_2S-$ group;

n is an integer having a value of from 2 to 5;

m is an integer having a value of zero or one;

x is an integer having a value of from 1 to 100; and

y is an integer having a value of from 1 to 100;

wherein the mole ratio of A:B in said coordination complex is from 2:1 to 1:10.

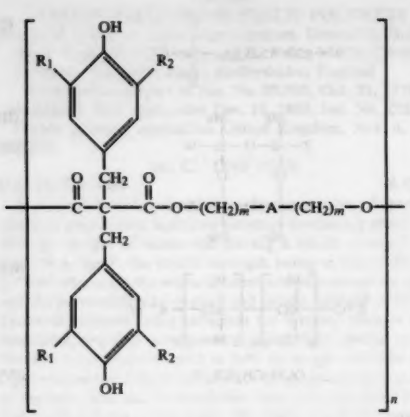
4,361,695

POLYESTERS OF N,N-DI-ALKANOL-AMINES WITH DI-(HYDROXY-ALKYL-BENZYL) MALONIC ACIDS AND USE THEREOF AS STABILIZERS FOR POLYMERS

Piero Di Battista, San Donato Milanese; Giuseppe Nelli, Milan, and Francesco Gratani, Sesto San Giovanni, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Nov. 5, 1980, Ser. No. 204,191
Claims priority, application Italy, Nov. 6, 1979, 27059 A/79
Int. Cl.[3] C08G 69/44
U.S. Cl. 528—289 14 Claims

1. Polyesters of N,N-di-alkanol-amines with di-(hydroxy-alkyl-benzyl)malonic acids, having the general formula:

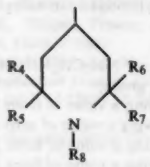


(I)

wherein: each of R_1 and R_2, which may be the same or different, is an alkyl radical having 1 to 6 carbon atoms, an aralkyl radical having 7 to 9 carbon atoms or a cyclo-alkyl radical having 5 to 8 carbon atoms; A is a nitrogen containing divalent radical selected from the group consisting of:

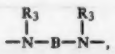
(a) a radical

in which R_3 may be an alkyl radical having 1 to 12 carbon atoms, an aryl radical having 6 to 12 carbon atoms or an alkyl-substituted piperidyl radical of the type:



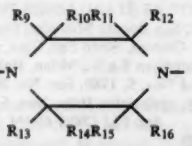
wherein: each of R_4, R_5, R_6 and R_7, which may be the same or different, is an alkyl radical having 1 to 4 carbon atoms, and R_8 is hydrogen or an alkyl radical having 1 to 4 carbon atoms;

(b) a radical



wherein R_3 has the same meaning specified hereinbefore and B is an alkylene radical having 2 to 12 carbon atoms or a cyclo-alkylene radical having 3 to 12 carbon atoms;

(c) a radical



wherein: each of R_9, R_{10}, R_{11}, R_{12}, R_{13}, R_{14}, R_{15} and R_{16}, which may the same or different is hydrogen or an alkyl radical having 1 to 4 carbon atoms, or two by two belong to an aliphatic or aromatic cycle having 5 to 12 carbon atoms;

m is an integer from 1 to 12 and

n is an integer from 2 to 100.

4,361,696

PROCESS FOR THE PRODUCTION OF ORGANIC ALKALI METAL SILICATE COMPOUNDS

David H Blount, 5450 Lea St., San Diego, Calif. 92105

Division of Ser. No. 251,132, Apr. 6, 1981, Pat. No. 4,321,184, which is a continuation-in-part of Ser. No. 146,474, May 5, 1980, Pat. No. 4,273,908, which is a continuation-in-part of Ser. No. 889,932, Mar. 27, 1978, abandoned, which is a continuation-in-part of Ser. No. 663,924, Mar. 4, 1976, Pat. No. 4,097,424, which is a continuation-in-part of Ser. No. 599,000, Jul. 7, 1975, Pat. No. 4,073,637, which is a continuation-in-part of Ser. No. 262,485, Jun. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 71,628, Sep. 11, 1970, abandoned. This application Dec. 21, 1981, Ser. No. 332,672

Int. Cl.³ C08G *77/00*

U.S. Cl. 528—362 **8 Claims**

1. The process for the production of poly(vinyl organic alkali metal silicate) polymer by the following steps:

(a) Mixing and reacting an oxidated silicon compound selected from the group consisting of hydrated silica, sodium silicate, potassium silicate, natural oxidated silicon compounds containing free silicic acid radicals and mixtures thereof, and alkali metal compound selected from the group consisting of alkali metal hydroxides selected from the group consisting of sodium hydroxide, potassium hydroxides, alkali metal carbonates selected from the group consisting of sodium carbonate, potassium and mixtures thereof in an aqueous solution and an organic compound which is attached to a substituent which will split off during the reaction is a substituted hydrocarbon which contains a substituent selected from the group consisting of halogen, acid sulfate, nitrate, acid phosphate, bicarbonate, formate, acetate, propionate, laurate, oleate, stearate, and oxalate, acid malonate, acid tartrate, acid citrate and mixtures thereof thereby producing an organic alkali metal compound, then

(b) mixing and reacting 50 to 100 parts by weight of the organic alkali metal silicate compound, 50 to 100 parts by weight of a vinyl monomer selected from the group consisting of styrene, vinyl acetate, vinyl chloride, vinylidine chloride, acrylic acid monomers, acrylate monomers, acrylonitrile and mixtures thereof; and a catalytic amount of a peroxide initiator thereby

(c) producing a poly (vinyl organic alkali metal silicate) polymer.

4,361,697

EXTRACTION, SEPARATION AND RECOVERY OF DITERPENE GLYCOSIDES FROM *STEVIA REBAUDIANA* PLANTS

Robert H. Dobberstein, Wheaton, Ill., and Mohamed S. Ahmed, Cairo, Egypt, assignors to F. K. Suzuki International, Inc., Arlington Heights, Ill.

Filed May 21, 1981, Ser. No. 265,905

Int. Cl.³ C07H *1/08*

U.S. Cl. 536—128 **31 Claims**

1. A process for recovering diterpene glycosides from *Stevia rebaudiana* plant material, said process comprising:

sequentially extracting *Stevia rebaudiana* plant material with a first solvent of intermediate polarity to remove impurities therefrom in a first extract substantially free of diterpene glycosides, and then with a second solvent of high polarity to give a second extract containing diterpene glycosides;

chromatographing the resulting extracted diterpene glyco-

sides on a liquid chromatography column having a packing comprising an oxygen-containing organic stationary phase covalently bonded through a silicon atom to an inorganic support;

said extracted glycosides being introduced onto said column for chromatography thereon in solution in said second solvent or in another solvent having a high polarity not substantially greater than the polarity of the second solvent;

said column being eluted with a solvent of polarity higher than that of said first solvent and lower than that of said second solvent; and

collecting individually eluate fractions rich in respective diterpene glycosides.

4,361,698

PROCESS FOR THE MANUFACTURE OF DIHALOGENOTRIAZINYLAMINO-NAPHTHOL COMPOUNDS

Joachim W. Otten, deceased, late of Offenbach am Main, Fed. Rep. of Germany; by Ursula Otten, heir, Heidelberg, Fed. Rep. of Germany; by Anna G. Rudolph nee Otten, heir, Dillenburg, Fed. Rep. of Germany, and by Fritz Meininger, Frankfurt am Main, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

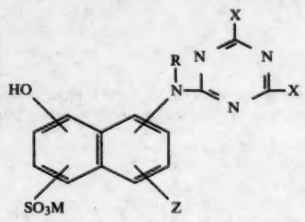
Filed Mar. 17, 1981, Ser. No. 244,612

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1980, 3010502

Int. Cl.³ C07D *251/44*

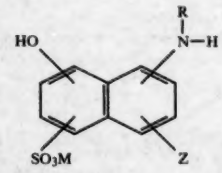
U.S. Cl. 544—211 **4 Claims**

1. In a process for the preparation of a dihalogenotriazinylamino-naphthol compound of formula (1)



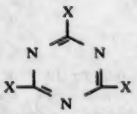
(1)

in which each X is fluorine, chlorine or bromine, R is hydrogen or alkyl of 1–4 C-atoms, M is hydrogen or the equivalent of a metal and Z is hydrogen or a group of the formula $—SO_3M$ with M defined above, comprising reacting an aminonaphthol compound of formula (2)



(2)

in which R, M and Z are defined as above, with M in formula (2) preferably being hydrogen, with a cyanuric halide compound of the formula (3)



(3)

in which X is defined as above, in water as reaction medium at a pH of 5 or smaller than 5, the improvement consisting in introducing the aminonaphthol compound of formula (2) in solid, undissolved form into the reaction and carrying out the reaction in suspension.

4,361,699

NOVEL PROCESS FOR THE PREPARATION OF N^6-ALKYL-ARPRINOCID

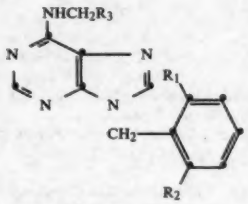
Gary H. Rasmusson, Watchung, and Richard L. Tolman, Warren, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 28, 1981, Ser. No. 305,804

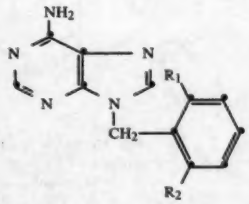
Int. Cl.³ C07D *473/34*

U.S. Cl. 544—277 **8 Claims**

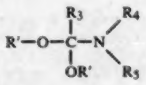
1. A process for the preparation of a compound having a formula:



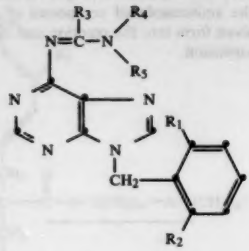
wherein R_1 and R_2 are halogen and R_3 is hydrogen or loweralkyl which comprises treating a compound having the formula:



wherein R_1 and R_2 are as defined above with a compound having the formula:



wherein R_3 is defined above and R_4 and R_5 are lower alkyl and R'' is lower alkyl, to prepare a compound having the formula:



wherein R_1, R_2, R_3, R_4 and R_5 are as defined above which is treated with a reducing agent and a dipolar solvent to produce the desired compound.

4,361,700

PYRIDOPYRIMIDINONE DERIVATIVES

William P. Purcell; Richard D. Gilliom, and Harlie A. Parish, Jr., all of Memphis, Tenn., assignors to James S. Waldron, Washington, D.C.

Filed May 20, 1980, Ser. No. 151,566
Int. Cl.³ C07D *487/04*
U.S. Cl. 544—279 **3 Claims**

1. 2-(3-Pyridyl)-3H-pyrido[2,3d]pyrimidin-4-one-1,2-dihydro.
2. 2-(4-Pyridyl)-3H-pyrido[2,3d]pyrimidin-4-one-1,2-dihydro.
3. 2(3-Pyridyl)-3-methyl-pyrido[2,3d]pyrimidin-4-one-1,2-dihydro.

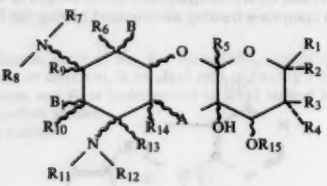
4,361,701

NOVEL COMPOUNDS, COMPOSITIONS AND PROCESSES

David R. White, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 13, 1979, Ser. No. 20,073
Int. Cl.³ C07D *323/04*
U.S. Cl. 549—361 **42 Claims**

1. Anomers and asteric mixtures of a compound having the formula



I

wherein R_1 through R_4 may be the same or different and are selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, lower alkynyl, lower haloalkyl, lower aminoalkyl, —OX and —$(CH_2)_n$—OX with the proviso that R_1 and R_2 are not OH and when one of R_2 or R_4 is OH the other cannot be OX,

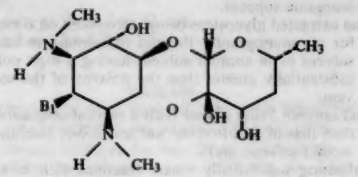
wherein X is selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, and lower alkynyl,

n is an integer of from one to four,

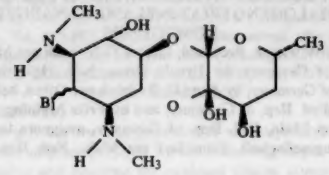
R_5–R_{15} are selected from the group consisting of hydrogen, lower alkyl, lower alkenyl and lower alkynyl with the proviso that one of R_7 and R_8 is always hydrogen and one of R_{11} and R_{12} is always hydrogen,

A is oxygen or sulfur,

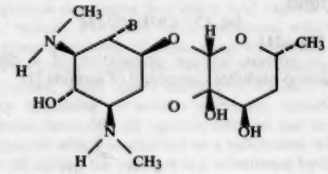
B and B_1 are selected from the group consisting of hydrogen, hydroxy, lower alkoxy, —O—lower alkenyl, thiol, thio lower alkyl and thio lower alkenyl with the proviso that when the compound is selected from the group consisting of



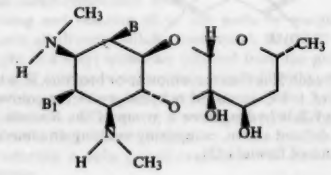
B_1 cannot be hydroxy; and when the compound has the formula



and

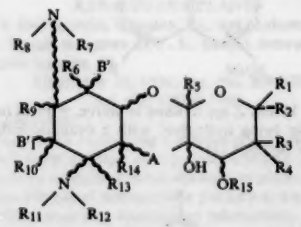


B and B_1 cannot be selected from the group consisting of hydrogen and hydroxy, and when the compound has the formula



B and B_1 cannot both be hydroxy.

7. A process for preparing a compound having the formula



I

wherein R_1 through R_4 may be the same or different and are selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, lower alkynyl, lower haloalkyl, lower aminoal-

kyl, —OX and —$(CH_2)_n$OX with the proviso that R_1 and R_2 are not OH and when one of R_3 or R_4 is OH, the other cannot be OX,

wherein X is selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, and lower alkynyl,

n is an integer of from one to four,

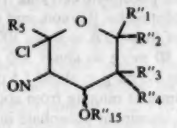
R_5–R_{15} are selected from the group consisting of hydrogen, lower alkyl, lower alkenyl and lower alkynyl with the proviso that one of R_7 and R_8 is always hydrogen and one of R_{11} and R_{12} is always hydrogen,

A is oxygen or sulfur,

B′ and B_1′ are selected from the group consisting of hydrogen, hydroxy, lower alkoxy, —O—lower alkenyl, thiol, thio lower alkyl and thio lower alkenyl,

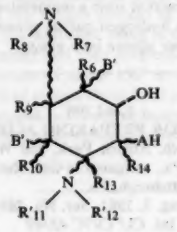
which comprises

Step (1) Reaction of a compound having the formula



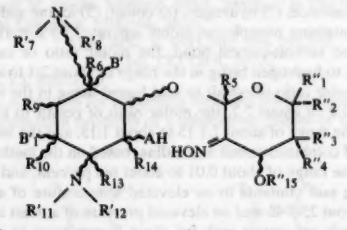
II

with a compound having the formula



III

to prepare a compound having the formula



IV

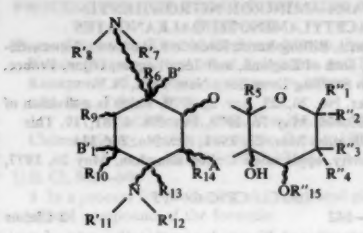
wherein R_1″ through R_4″ may be the same or different and are selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, lower alkynyl, lower haloalkyl, lower aminoalkyl, —OX″ and —(CH_2)—OX″,

wherein X″ is selected from the group consisting of lower alkyl, lower alkenyl, lower alkynyl, acyl and aralkyl,

R_7′, R_8′, R_{11}′ and R_{12}′ are selected from the group consisting of lower alkyl, lower alkenyl, lower alkynyl and a blocking group selected from the group consisting of acyl, aralkoxycarbonyl, aryloxy carbonyl, halogenated alkoxy carbonyl and alkyloxycarbonyl with the proviso that one of R_7′ and R_8′ is always a blocking group and one of R_{11}′ and R_{12}′ is always a blocking group and

R_{15}″ is lower alkyl, lower alkenyl, lower alkynyl, acyl or aralkyl,

Step (2) Deoximation of compound IV of step 1 to prepare a compound having the formula



V

Step (3) Deprotection of Compound V of Step 2 to a compound of formula I.

4,361,702

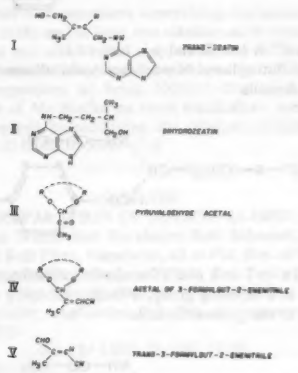
PROCESS FOR THE PREPARATION OF TRANS-3-FORMYLBUT-2-ENENITRILE

Shi-Chow Chen, and John M. MacTaggart, both of Edmonton, Canada, assignors to Alberta Research Council, Edmonton, Canada

Filed Jan. 21, 1980, Ser. No. 113,444

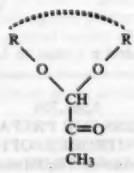
Int. Cl.³ C07D *319/04;* C07C *121/34*

U.S. Cl. 549—373 **8 Claims**



1. The process comprising:

reacting a pyruvaldehyde acetal having the general formula



where R is an alkyl, cyloalkyl, substituted alkyl, or alkenyl group having from about 1–10 carbon atoms, or part of a methylene chain in a cyclic acetal of a 5–10 membered ring structure, with acetonitrile in the presence of a strong base at an elevated temperature for a time sufficient to form an acetal of 3-formylbut-2-enenitrile.

7. The process as set forth in claim **1** wherein:

the pyruvaldehyde acetal is 2-acetyl-1,3-dioxan.

4,361,703
PARA-AMINO(OR NITRO)PHENYL N-ACETYLAMINOTHIOALKANOATES

George Margetts, Billingshurst; Roderic S. Andrews, Newcastle-upon-Tyne, both of England, and Jean Legros, Dijon, France, assignors to Sterling Drug Inc., New York, N.Y.

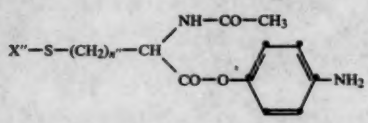
Division of Ser. No. 26,329, Apr. 2, 1979, which is a division of Ser. No. 909,846, May 26, 1978, Pat. No. 4,181,719. This application Mar. 23, 1981, Ser. No. 246,234

Claims priority, application United Kingdom, May 26, 1977, 22218/77

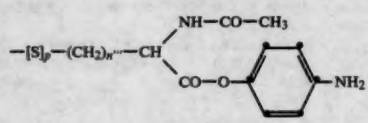
Int. Cl.³ C07C *69/773*

U.S. Cl. 560—142 2 Claims

1. para-Aminophenyl N-acetylaminothioalkanoate of general formula

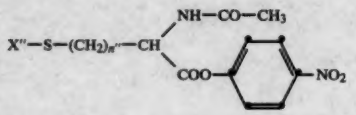


in which n'' is 1 or 2, and X'' is a hydrogen atom, a blocking group, a methyl group or a grouping of the general formula

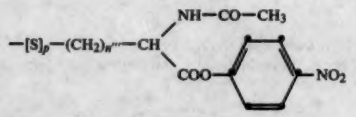


wherein n''' is 1 or 2, and p is zero or 1.

2. para-Nitrophenyl N'-acetylaminothioalkanoate having the general formula



in which n'' is 1 or 2, and X'' is a hydrogen atom, tetrahydro-2-pyranyl as a blocking group, a methyl group or an ester conforming to the general formula



wherein n''' is 1 or 2, and p is zero or 1.

4,361,704
PROCESS FOR PREPARING M,M'-DINITROBENZOPHENONE

Anatoli Onopchenko, Monroeville; Edward T. Sabourin, Allison Park, and Charles M. Selwitz, Monroeville, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Mar. 11, 1981, Ser. No. 242,691

Int. Cl.³ C07C *45/61*

U.S. Cl. 568—306 9 Claims

1. A process for preparing m,m'-dinitrobenzophenone which comprises reacting benzophenone with nitric acid in oleum wherein the weight ratios of benzophenone, sulfuric acid and sulfur trioxide in the feed are in the range of about 1:2:2 to about 1:15:4.

4,361,705
PROCESS FOR HYDROGENATING UNSATURATED COMPOUNDS

George Marcelin, Pittsburgh; Roger F. Vogel, Butler, and Harold E. Swift, Gibsonia, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jun. 29, 1981, Ser. No. 278,822

Int. Cl.³ C07C *45/62, 29/14, 5/03*

U.S. Cl. 568—462 9 Claims

1. A process for hydrogenating an aliphatic unsaturated organic compound having from two to 20 carbon atoms which comprises contacting the same with hydrogen in the presence of a catalyst composed of an amorphous support containing alumina and aluminum phosphate carrying from about three to about 60 weight percent nickel thereon, said support having an average pore radius of from 10 Å to about 300 Å, a surface area ranging from about 80 m^2/g to about 350 m^2/g and a pore volume of from about 0.3 cc/g to about 1.5 cc/g, said alumina being present in an amount ranging from about eight to about 40 mole percent and aluminum phosphate in an amount ranging from about mole 60 to about 92 percent wherein said unsaturated organic compound is passed over said catalyst at a liquid hourly space velocity of about 0.1 to about 20 while maintaining in the reaction zone a temperature of about 30° to about 350° C. and a hydrogen partial pressure of about 0 to about 1500 pounds per square inch gauge.

4,361,706
PROCESS FOR PREPARING ALDEHYDES

Mohammad M. Habib, Allison Park, and Wayne R. Pretzer, Gibsonia, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Aug. 3, 1981, Ser. No. 289,404

Int. Cl.³ C07C *45/49*

U.S. Cl. 568—487 35 Claims

1. A process for selectively producing aldehydes which comprises introducing into a reaction zone (1) methanol, (2) carbon monoxide, (3) hydrogen, (4) cobalt, (5) iodine and (6) a ligand containing phosphorus atoms separated by a sterically constrained carbon-carbon bond, the molar ratio of carbon monoxide to hydrogen being in the range of about 2:1 to about 1:2, the molar ratio of cobalt to said ligand being in the range of about 1:2 to about 7:1, the molar ratio of cobalt to iodine being in the range of about 1:1.15 to about 1:15, and the weight percent of combined cobalt and iodine, based on the methanol, being in the range of about 0.01 to about ten percent, and then subjecting said contents to an elevated temperature of about 150° to about 250° C. and an elevated pressure of at least about 2200 pounds per square inch for about five minutes to about five hours, sufficient to convert methanol to a product predominating in aldehydes.

4,361,707
PROCESS FOR PRODUCING ALDEHYDES

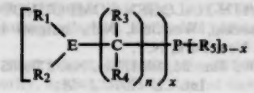
Mohammad M. Habib, Allison Park, and Wayne R. Pretzer, Gibsonia, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Aug. 3, 1981, Ser. No. 289,418

Int. Cl.³ C07C *45/49*

U.S. Cl. 568—487 24 Claims

1. A process for selectively producing aldehydes which comprises introducing into a reaction zone (1) methanol, (2) carbon monoxide, (3) hydrogen, (4) cobalt, (5) iodine, and (6) a phosphorus-containing ligand defined by the following formula:



wherein R_1, R_2 and R_5 are either alike or different members selected from the group consisting of alkyl radicals having from one to 24 carbon atoms, aryl radicals having from six to 20 carbon atoms, alkenyl radicals having from two to 30 carbon atoms, cycloalkyl radicals having from three to 40 carbon atoms, cycloalkyl radicals having from three to 40 carbon atoms, aralkyl and alkaryl radicals having from six to 40 carbon atoms and dihydrocarbyl phosphino alkyl radicals, R_3 and R_4 are either alike or different members selected from the group consisting of hydrogen, alkyl radicals having from one to 24 carbon atoms, aryl radicals having from six to 20 carbon atoms, alkenyl radicals having from two to 30 carbon atoms, cycloalkyl radicals having from three to 40 carbon atoms, aralkyl and alkaryl radicals having from six to 40 carbon atoms, and dihydrocarbyl phosphino alkyl radicals, E is phosphorus, n is an integer ranging from 1 to 3, and x can be 1 to 3, the molar ratio of carbon monoxide to hydrogen being in the range of about 2:1 to about 1:2, the molar ratio of cobalt to said ligand being in the range of about 1:2 to about 7:1, the molar ratio of cobalt to iodine being in the range of about 1:1.15 to about 1:15, and the weight percent of combined cobalt and iodine, based on the methanol, being in the range of about 0.01 to about ten percent, and then subjecting said contents to an elevated temperature of about 150° to about 250° C. and an elevated pressure of at least about 2200 pounds per square inch for about five minutes to about five hours, sufficient to convert methanol to a product predominating in aldehydes.

4,361,708

FORMATION OF BIPHENOLS

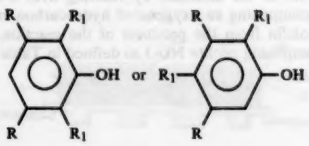
Robert M. Strom, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 6, 1981, Ser. No. 241,343

Int. Cl.³ C07C *39/12*

U.S. Cl. 568—730 **9 Claims**

1. A process for producing biphenol carbon-carbon coupled condensation products of a substituted phenol of the formula:



wherein each R is hydrogen, halogen, or R_1; and each R_1 is a substituent having up to 10 carbons selected from the group consisting of hydrocarbon, halohydrocarbon, and hydrocarbonoxy comprising contacting the substituted phenol at an elevated temperature with nitrobenzene under an inert atmosphere in the presence of a heterogeneous oxidative coupling catalyst capable of catalyzing the coupling reaction selected from the group consisting of platinum, palladium, ruthenium, rhodium, irridium, metals of group VII and IB of the Periodic Table, chromium, molybdenum, zinc and mixtures thereof present in a valence suitable for causing the carbon-carbon coupling of the pheolic compound.

4,361,709

PROCESS FOR THE PRODUCTION OF O-ALKYLATED PHENOLS

Motoo Kawamata; Kazushi Ohshima; Mitsuo Onofusa; Akihide Kudoh; Makoto Kotani, all of Yokohama, and Takeshi Tsuda, Kanagawa, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

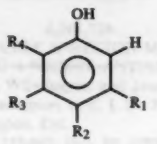
Filed May 20, 1981, Ser. No. 265,600

Claims priority, application Japan, Dec. 1, 1978, 53-147764

Int. Cl.³ C07C *37/11*

U.S. Cl. 568—804 **12 Claims**

1. In a process for producing an o-alkylated phenol wherein a phenol compound of the formula:



where R_1, R_2, R_3 and R_4 stand for hydrogen, alkyl radicals of 1 to 4 carbon atoms, or unsubstituted or substituted phenyl radicals, is reacted with a saturated aliphatic alcohol having from 1 to 4 carbon atoms in the presence of a catalyst at a temperature of from 300° to 500° C., the molar ratio of said phenol compound to said alcohol ranging from 1:1 to 1:15, the improvement in which said catalyst is selected from manganese oxide-containing catalysts prepared by modifying:

(a) a catalyst composition comprising manganese oxide and silicon oxide, or

(b) a catalyst composition comprising manganese oxide, silicon oxide and at least one alkaline earth metal oxide

with at least one alkali metal compound, the atomic ratio of Mn:Si:alkali metal in said catalyst prepared by modifying the catalyst composition (a) being $100{:}0.01\text{–}20{:}10^{-5}\text{–}5$, and the atomic ratio of Mn:Si:alkaline earth metal:alkali metal in said catalyst prepared by modifying the catalyst composition (b) being $100{:}0.01\text{–}20{:}0.01\text{–}30{:}10^{-5}\text{–}5$.

4,361,710

PREPARATION OF BUTANE-1,4-DIOL

Hans-Martin Weitz, Bad Durkheim; Rolf Schnabel, Schifferstadt, and Rolf Pirtz, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 10, 1982, Ser. No. 347,580

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1981, 3106819

Int. Cl.³ C07C *29/136, 69/60*

U.S. Cl. 568—864 **4 Claims**

1. In a process for the preparation of butane-1,4-diol by the catalytic hydrogenation of an alcoholic solution of maleic acid ester, the improvements comprising: catalytically oxidizing hydrocarbon by air to form a gaseous mixture containing maleic anhydride; washing said mixture with a monohydric or polyhydric aliphatic alcohol having a boiling point above 180° C. to form a solution of maleic acid half-ester in the alcohol; and heating the solution to remove water and to form a solution of maleic acid diester in the alcohol.

4,361,711

ALCOHOLS FROM OLEFINS AND SYNTHESIS GAS

M. W. Blaskie, Shaker Heights; J. R. Fox, Solon, and F. A. Pesa, Aurora, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 18, 1981, Ser. No. 332,036

Int. Cl.³ C07C *29/36, 27/20*

U.S. Cl. 568—909 **10 Claims**

1. A continuous, vapor phase process for directly converting a mono-olefin having no more than 8 carbon atoms to an alcohol comprising contacting said olefin together with carbon

monoxide and hydrogen in the vapor phase at a temperature of at least 100° C. and a pressure of at least 150 psig with a solid oxide complex of the formula

$$A_aRhO_x$$

wherein

A is Fe, Zn, Ir, Ru, Nb, Cr, Mn and/or Pt;

a is 0.001 to 10; and

x is greater than zero but less than a number sufficient to satisfy the valence requirements of the other elements present when in a fully oxidized state.

4,361,712

CYANIDE REDUCTION IN NITROAROMATIC PROCESS

Frederick L. Herman, Allentown, and John E. Sawicki, Breinigsville, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 19, 1980, Ser. No. 151,024

Int. Cl.³ C07C *76/02*

U.S. Cl. 568—932 6 Claims

1. In a process for producing a polynitroaromatic compound from a mononucleararomatic compound which comprises:

nitrating the mononucleararomatic compound in a first stage nitration zone with an aqueous mixture of sulfuric and nitric acid to form an organic phase containing mononitroaromatic and by-product nitrophenolic material and an aqueous phase containing spent acid;

separating the organic phase from the aqueous phase containing spent acid;

nitrating the mononitroaromatic contained in the organic phase in a second stage nitration zone using an aqueous mixture of sulfuric and nitric acid to form an organic phase containing a polynitroaromatic compound and an aqueous acid phase; and

separating the organic phase from the aqueous phase; and

recovering the polynitroaromatic compound from the organic phase;

the improvement for reducing cyanide and nitrous acid formation during the process for producing polynitroaromatic compound which comprises:

reducing the by-product nitrophenolic material present in the organic phase from the first stage nitration zone prior to nitrating the mononitroaromatic in the second stage nitration zone.

4,361,713

PARA-SELECTIVE ZEOLITE CATALYSTS TREATED WITH HALOGEN COMPOUNDS

Warren W. Kaeding, Westfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 26, 1981, Ser. No. 277,483

Int. Cl.³ C07C *2/68*

U.S. Cl. 585—467 11 Claims

1. A process for converting aromatic compounds to a dialkyl benzene compound mixture highly enriched in the para-dialkylbenzene isomer, said process comprising contacting said aromatic compounds under conversion conditions with a zeolite based catalyst comprising a crystalline zeolite material characterized by a silica to alumina ratio of at least 12 and a constraint index of from about 1 to 12, said catalyst having been contacted with a gaseous medium containing a halogen-based treating agent selected from HCl, HBr, Cl_2, Br_2 and mixtures thereof under para-selectivity enhancing conditions.

4,361,714

PREPARATION OF LINEAR OLEFIN PRODUCTS

Arthur W. Langer, Watchung; John J. Steger, Scotch Plains, and Terry J. Burkhardt, Cranford, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 14, 1981, Ser. No. 330,480

Int. Cl.³ C07C *2/02*

U.S. Cl. 585—521 7 Claims

1. A process for preparing linear alpha olefins and waxes having a total product $\overline{M}_n$ in the range 200 to 700 which comprises polymerizing an ethylene-containing gas in the presence of the reaction product of a Zr metal compound having the formula ZrX_aA_b wherein $a=3$ or 4, $b=0$ or 1 and $a+b=4$ and X=Cl or Br and A is Cl, Br, I, OR or OOCR with R_2Zn, wherein R is an alkyl group having about 1 to about 5 carbon atoms in the presence of a diluent at a temperature of about 50° to 200° C. and an ethylene pressure above about 3.5 MPa, wherein the $\overline{M}_n$ of said reaction product is controlled by the molar ratio of said $R_2Zn/ZrCl_4$, said molar ratio being about 0.1/1 to about 1/1.

4,361,715

OLEFINS

Glyn D. Short, Yarm; Michael S. Spencer, Stockton-on-Tees, and Thomas V. Whittam, Darlington, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 15, 1981, Ser. No. 260,838

Claims priority, application United Kingdom, May 13, 1980, 8015888

Int. Cl.³ C07C *1/20*

U.S. Cl. 585—640 6 Claims

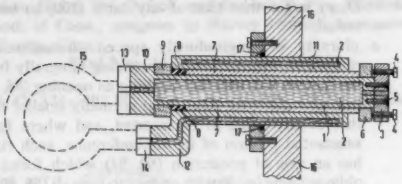
1. A process for making an olefin containing 6 or fewer carbon atoms in the molecule by reacting over a catalyst a feedstock comprising an oxygenated hydrocarbon and recovering the olefin from the products of the reaction, the said catalyst comprising zeolite NU-3 as defined in Table 1 hereinbefore.

4,361,716

CURRENT LEAD-IN OF THE COAXIAL TYPE FOR SEALING TO A CONTAINER WALL

Wolfgang Keller, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 8, 1980, Ser. No. 147,748
Claims priority, application Fed. Rep. of Germany, May 17, 1979, 2919988
Int. Cl.[3] H05B *9/00;* B01J *17/08;* H01B *17/26*
U.S. Cl. 373—147 3 Claims



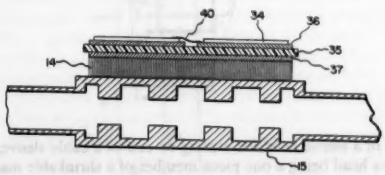
1. Current lead-in of the coaxial type, comprising at least two conducting tubes passing through a container wall, a gas-tight seal disposed between said tubes and the wall, an induction heating coil supplied with high frequency current from said tubes for producing a melting zone in a semiconductor rod, a pressure-deformable electrically-insulating tension element disposed between said tubes, said at least two conducting tubes comprising a liquid-cooled inner tube having two ends and a liquid-cooled outer tube, a pressure plate disposed at one of said ends of said inner tube, a ring coaxially surrounding said inner tube in vicinity of said one end thereof, a ceramic tube coaxially surrounding said inner tube between said ring and said tension element, a ceramic ring stop secured to and coaxially surrounding the other of said ends of said inner tube, and pressure screw means disposed in threaded holes formed in said pressure plate for applying pressure to said tension element through said ring and ceramic tube, said ceramic tube and tension element having a smaller outside diameter than said ring and ring stop, and said ceramic tube and tension element being coaxially surrounded by said outer tube.

4,361,717

FLUID COOLED SOLAR POWERED PHOTOVOLTAIC CELL

Robert S. Gilmore, Burnt Hills; Homer H. Glascock, II, and Harold F. Webster, both of Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 5, 1980, Ser. No. 213,259
Int. Cl.[3] H01L *31/06*
U.S. Cl. 136—246 6 Claims



1. A fluid cooled photovoltaic device which converts concentrated sunlight into electrical energy comprising:

a semiconductor wafer in the lower face of which is formed an interdigitated solar cell having alternating fingers of p-type and n-type semiconductor on each of which is a metallization, one set of semiconductor fingers and metallizations being elevated above the other set of fingers and metallizations;

a fluid cooled metal heat sink;

device leads connected to the metallizations on said one set of elevated semiconductor fingers and to said metal heat sink;

a structured copper strain relieving member having one surface bonded to the metallizations on said other set of semiconductor fingers and the opposing surface bonded to said metal heat sink;

said structured copper member being comprised of substantially parallel closely packed strands of copper approximately equal length, and highly thermally and electrically conductive and pliable so as to accommodate to the difference in expansion between said metal heat sink and semiconductor wafer.

4,361,718

SILICON SOLAR CELL N-REGION METALLIZATIONS COMPRISING A NICKEL-ANTIMONY ALLOY

Sanford M. Marcus, Wilmington, and Joseph R. Rellick, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 218,493, Dec. 19, 1980, Pat. No. 4,342,795. This application Nov. 9, 1981, Ser. No. 319,663
Int. Cl.[3] H01L *31/06*
U.S. Cl. 136—256 5 Claims

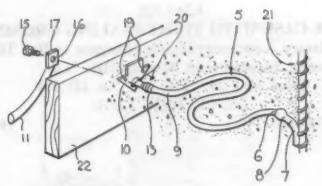
1. A metallized silicon solar cell having an N-type and a P-type region, prepared by (a) screen printing the N-type region of the solar cell with a thick film composition comprising an alloy of nickel and antimony dispersed in particle form in an organic vehicle in a concentration sufficient to make a printable paste, and (b) firing the printed composition to a temperature within the range of 500–650° C. in an inert atmosphere with a dwell time of about 6 minutes at the peak temperature.

4,361,719

EARTHING SYSTEMS

William Hyde, 52 Wilmay Ave., Auckland, New Zealand

Filed Mar. 17, 1981, Ser. No. 244,825
Int. Cl.[3] H01R *4/66*
U.S. Cl. 174—6 5 Claims



1. An electrical earthing system which, in use, is fixed to electrically conducting parts of the reinforcing of a building structure, said system comprising:

(i) a lug formed from the same or substantially the same material as the electrically conducting parts of said reinforcing;

(ii) a flexible conductor welded at one end thereof to said lug; and

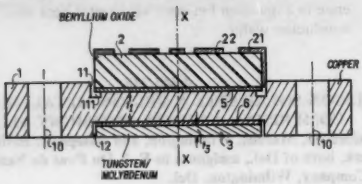
(iii) a fixing member formed of a material of higher electrical conductivity than said lug welded to the other end of said flexible conductor, said fixing member having a substantially planar surface portion, a tapped aperture set into said fixing member through said substantially planar surface portion to facilitate attachment of a further conductor thereto, and at least one aperture passing entirely therethrough and through said planar surface portion, whereby said planar surface portion may be attached to the planar surface of a member used in constructing the building.

4,361,720

LOW THERMAL RESISTANCE INSULATING SUPPORT AND BASE OR BOX FOR POWER COMPONENT INCORPORATING SUCH A SUPPORT

Jean-Claude Resneau; Jean Doyen, and Robert Ribier, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 30, 1980, Ser. No. 145,023
Claims priority, application France, May 2, 1979, 79 11023
Int. Cl.³ H05K 7/20
U.S. Cl. 174—16 HS 8 Claims



1. A low thermal resistance insulating support comprising:

a first element made from an electrically insulating and thermally conducting material and having a first face portion;

a second element integrally connected to said first element at said first face portion and made from a metal with a higher expansion coefficient than that of said thermally conducting material of said first element;

said second element having a first and second recess formed therein, and having a predetermined remaining thickness therebetween, said first recess being adjacent to the first face portion of said first element; and

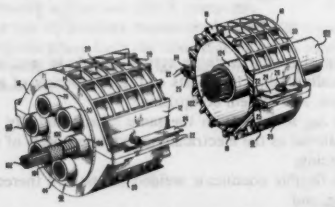
a metal member mounted in said second recess having an expansion coefficient close to that of said thermally conducting material, and having a thickness whose order of magnitude is substantially equivalent to said remaining thickness of said second element wherein said metal member is mounted within said second recess such that an outer surface portion thereof is flush with the surface of said second element.

4,361,721

SPLICE CASE WITH TIGHT SEALING GROMMET

John R. Massey, Lawrenceville, Ga., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 21, 1980, Ser. No. 151,919
Int. Cl.³ H02G 15/10
U.S. Cl. 174—92 16 Claims



1. A splice case (10) for connecting at least one multiconductor telecommunication cable (100) to at least one other multiconductor telecommunication cable (120), the splice case comprising:

a substantially tubular casing (12) including first and second substantially half-tubular shells (18);

means for joining (24, 25, 26) the shells, the joined shells defining an access opening (14) at either longitudinal end (16) of the casing; and

end means, positioned at each of the access openings of the casing and configured for accommodating one or more cables, at least one of the end means comprising:

at least one sealing grommet (40) made of a unitary elastomeric body comprising:

inner (42) and outer faces (44);

a substantially longitudinal outer surface means (46) connecting the faces;

at least one cable receiving passageway (50, 70) in communication with both faces, the passageway comprising:

an interior sidewall (52, 72) having a diameter (D_W, D_{SW}) larger than that of any cable (100) to be inserted;

a plurality of longitudinally spaced circumferential ridges (54, 74), each ridge extending integrally from the interior sidewall and defining an opening (56, 76) having a diameter (D_R, D_{SR}) normally smaller than that of any cable to be inserted, and where for a substantial portion of its circumference, each ridge has an axis of projection (60, 82) which forms an oblique angle (α, β) with respect to the axis (58, 80) of the passageway and is sufficiently elongated in longitudinal cross section so as to be capable of flexing with respect to the axis of projection, whereby the ridge can flex along the substantial portion to help enlarge the opening diameter as needed to accommodate and form a radial seal about a cable being inserted,

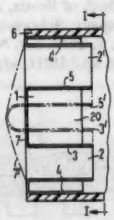
said grommet further including a slit (71) between the longitudinal outer surface means (46) and at least one of the passageways (70) and where each ridge (74) in the slitted passageway varies in projecting length to become stub-like in the vicinity of the slit (71) and substantially incapable of flexing.

4,361,722

SLEEVE HEAD FOR CLOSING THE ENDS OF A CABLE SLEEVE

Dieter Kunze, Neuried, and Josef Bauer, Germering, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 4, 1981, Ser. No. 231,437
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1980, 3007604
Int. Cl.³ H02G 15/18
U.S. Cl. 174—93 14 Claims



1. In a sleeve head for closing an end of a cable sleeve, said sleeve head being a one piece member of a shrinkable material having a transverse wall with an integral outer wall portion and having at least one integral flange having an opening, each said flange forming cable inlet means for sealingly receiving a cable extending into the cable sleeve by shrinking from an expanded state toward a normal state and into sealing engagement on said cable when said cable is inserted therein, the improvements comprising each of said flanges in the expanded state being expanded only in a radial direction and having substantially no deformation and stresses along an axial direction of the opening, said transverse wall adjacent each of the

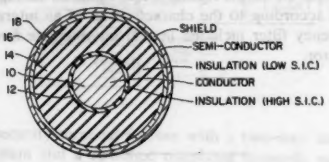
expanded parts of said flanges being folded outwardly to compensate for the expansion of the size of said flanges so that during heat shrinking, each flange will shrink radially inward on a cable disposed therein with the folded wall moving to a substantially transverse planar condition without any axial shrinkage of the flanges to create disruptions on the seals.

4,361,723

INSULATED HIGH VOLTAGE CABLES

Andrew Hvizd, Jr., Oxford, and Richard T. Pye, Middlebury, both of Conn., assignors to Harvey Hubbell Incorporated, Orange, Conn.

Filed Mar. 16, 1981, Ser. No. 244,053
Int. Cl.³ H01B 4/02
U.S. Cl. 174—102 SC 11 Claims



1. An insulated high voltage cable comprising a conductor insulated with at least two laminar layers of insulating material, at least one of said layers being relatively thick and having a low SIC of no greater than 4.5, at least one other of said layers having a high SIC of 7 or more and being in contact and interfacing with a surface of said low SIC layer, said high SIC layer being relatively thin and having a tan δ/SIC value no greater than 0.005 over a temperature range of 40° to 90° C.

4,361,724

COPPER BUSBAR OF H-SHAPED CROSS-SECTION

William F. Olashaw, Plainville, Conn., assignor to General Electric Company, New York, N.Y.

Filed Dec. 10, 1980, Ser. No. 214,853
Int. Cl.³ H02B 1/20
U.S. Cl. 174—129 B 3 Claims

1. A busbar for utilization in electrical distribution equipment, said busbar being of H-shaped cross-sectional configuration and comprising:

a pair of elongated bars of flat, rectangular cross-section; and

a plurality of elongated webs having combined lengths less than said bars, said webs being bolted to said bars in longitudinally aligned, gapped relation.

4,361,725

TELETEXT AND DISPLAY APPARATUS FOR GENERAL SURFACE

Jean-Paul Dagnelie, 7 Quai de la Prevalaye, 35000 Rennes; Robert Veilex, Domaine des Bois de Jarcy-F-91480 Varennes Jarcy, Quincy-sous-Senart, and Jean-Claude Rahuel, 12 Square de Tanouarn, F-35000 Rennes, all of France

Filed Feb. 17, 1981, Ser. No. 234,775
Claims priority, application France, Feb. 21, 1980, 80 04122
Int. Cl.³ G08C 21/00
U.S. Cl. 178—19 6 Claims

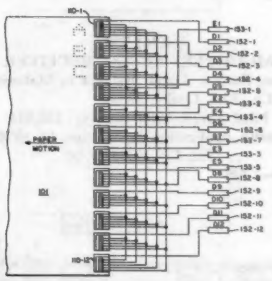
1. A teletext and display apparatus comprising a pair of wire sheet means forming an orthogonal array of conductors, display means for supporting said wire sheet means in front of a display area and being operated responsive to signals from said array of conductors, transparent insulating means separating said pair of wire sheet means, whereby said wire sheet means forms a graphics tablet in front of said display area, means for energizing said wires with an alternating current, and a transparent non-magnetic conductive layer interposed between said graphics tablet and said display area.

4,361,726

THERMAL MESSAGE PRINTER

Richard B. Drabing, Los Altos, and William S. Duvall, Portola Valley, both of Calif., assignors to Amtel Systems Corp., Sunnyvale, Calif.

Filed Feb. 29, 1980, Ser. No. 125,846
Int. Cl.³ H04L 15/24
U.S. Cl. 178—23 R 8 Claims



1. A message printer for displaying a message on thermally sensitive recording paper comprising thermal printer means for printing a message having a plurality of lines, said message represented by a series of characters on specified ones of said lines where each of said characters is formed by a pattern of dots energized from a matrix of dots having N rows and M columns, said thermal printer means including a first number of fixed printheads arranged to form a column, said first number equal to the number of lines to be printed, each of said fixed printheads having at least 1 by N dot elements, means for stepping said recording paper in a sideways fashion past said fixed printheads, and control means for sequentially enabling selected ones of said fixed heads and said dot elements for each

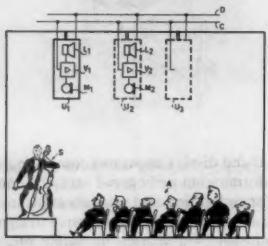
column of each of said characters, thereby displaying said message in a sideways fashion.

4,361,727

SOUND REPRODUCING ARRANGEMENT FOR ARTIFICIAL REVERBERATION

Nico V. Franssen, deceased, late of Knegsel, Netherlands, and by Friedrich J. de Haan, administrator, Dommelen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 11, 1980, Ser. No. 120,413
Claims priority, application Netherlands, Feb. 13, 1979, 7901120
Int. Cl.³ G10K *11/00*
U.S. Cl. 179—1 J 6 Claims



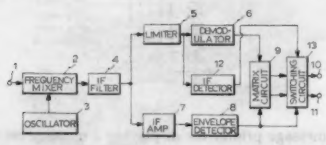
1. A sound-reproducing arrangement for artificial reverberation comprising, a plurality of loudspeakers arranged within an enclosed space, a plurality of microphones and a plurality of amplifiers, means connecting the loudspeakers to associated microphones via the amplifiers to form a plurality of separate mechanical units each of which includes a microphone, an amplifier and a loudspeaker connected in cascade, the loop gain of each of the mechanical units having a value less than one, and wherein the separate mechanical units are arranged in such a way relative to each other that the sound energy which the microphone of one mechanical unit picks up from its own loudspeaker is low relative to the sound energy which is picked up in total by said microphone from the loudspeakers not belonging to said one mechanical unit.

4,361,728

MULTIPLEX SIGNAL RECEIVER

Kenzo Tanabe, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 9, 1980, Ser. No. 138,515
Claims priority, application Japan, Apr. 13, 1979, 54-45649
Int. Cl.³ H04H *5/00*
U.S. Cl. 179—1 GS 3 Claims



1. A multiplex signal receiver used for multiplex signal transmission systems which transmit two independent signals by amplitude modulation and angle modulation of a single carrier, said receiver comprising:

a switching circuit;

an angle demodulator for demodulating an angle modulated signal component of a signal received by said receiver;

an envelope detector for demodulating an amplitude modulated signal component of said received signal;

an intermediate frequency detector for detecting an intermediate frequency and for outputting a control signal for controlling said signal switching circuit; and

a matrix circuit for modifying an output signal of said angle demodulator and an output signal of said envelope detector by addition and subtraction thereof so as to obtain two output signals for driving a two channel amplifier through said signal switching circuit;

wherein said signal switching circuit is supplied with said two output signals of said matrix circuit and the output signal of said envelope detector and selects as its output signals either said two output signals of said matrix circuit or said output of said envelope detector according to said control signal;

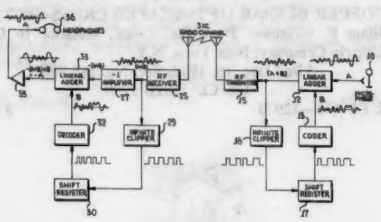
and wherein said selection of the output signals of said signal switching circuit is dependent upon the closeness of said intermediate frequency to a predetermined frequency, and wherein the frequency range of said intermediate frequency for selecting said two output signals of said matrix circuit as the output signals of said signal switching circuit is set according to the characteristics of an intermediate frequency filter included in said intermediate frequency detector.

4,361,729

NARROWBAND ANALOG MESSAGE PRIVACY SYSTEM

Laurence A. Barnes, Jr., Springfield, and Ronald E. Irons, Reston, both of Va., assignors to American Standard Inc., New York, N.Y.

Filed Jan. 24, 1968, Ser. No. 700,186
Int. Cl.² H04K *1/02*
U.S. Cl. 179—1.5 R 6 Claims

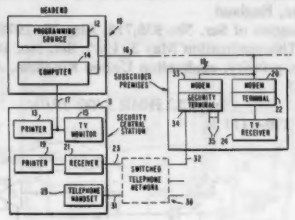


1. A self-synchronizing message privacy system having a transmitting terminal and a receiving terminal, and comprising, at the transmitting terminal, means for generating a noiselike waveform, means for linearly combining said noiselike waveform with an analog message signal to be transmitted to the receiving terminal to produce a composite scrambled signal, and means for transmitting said composite signal to said receiving terminal; said generating means including an infinite clipper responsive to said composite signal for conversion thereof to a digital format, a multi-stage shift register for serially accepting said digital format, means responsive to axis transitions of said digital format for applying shift pulses to said shift register in accordance therewith, whereby to successively shift the contents of each stage to the next successive stage, means for logically combining those of the contents of the shift register applied thereto to produce a varying multilevel format constituting said noiselike waveform, and switch means for selectively applying contents of said shift register to said logical combining means.

4,361,730
SECURITY TERMINAL FOR USE WITH TWO-WAY INTERACTIVE CABLE SYSTEM

Tommie L. Barber; Miklos B. Korodi, both of Columbus, Ohio; Steven J. Davis, Manhattan Beach, Calif.; David A. Schuldt, Mountain View, Calif.; Paul E. Christenson, Sunnyvale, Calif.; Andrew C. Towse; Donald S. Jones, both of San Jose, Calif., and David J. Roh, Longview, Tex., assignors to Warner Amex Cable Communications Inc., New York, N.Y.

Filed Aug. 29, 1980, Ser. No. 182,627
Int. Cl.³ H04M *11/04*
U.S. Cl. 179—5 R **86 Claims**



1. A security terminal for use with a two-way interactive cable system and a switched telephone network; said cable system having a central station including means for transmitting address and control signals over a cable to control communications with interactive television terminals on the premises of respective subscribers, and means for receiving response signals over said cable from said television terminals; said security terminal comprising

means for developing an alarm code signal;

control means connected to said cable for recognizing a respective address and in response thereto for transmitting said alarm code signal over said cable to said central station;

said control means being further operative to recognize transmission along said cable from said central station of a confirmation of said alarm code signal; and

telephone dialer means connected to a telephone line in said switched telephone network;

said control means being responsive to a failure to recognize a confirmation of said alarm code signal for causing said telephone dialer means to dial a predetermined telephone number, and for outputting on said telephone line a signal identifying the security terminal and a signal representative of said alarm code signal.

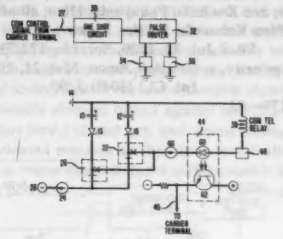
4,361,731
COIN TELEPHONE CONTROL CIRCUIT

Lanny S. Smoot, Morris Plains, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 13, 1981, Ser. No. 234,249
Int. Cl.³ H04M *17/02, 19/00*
U.S. Cl. 179—6.3 R **9 Claims**

1. A coin telephone control circuit CHARACTERIZED BY

means for providing a constant current pulse to effect collection or refund of coins in said coin telephone (38), said means including

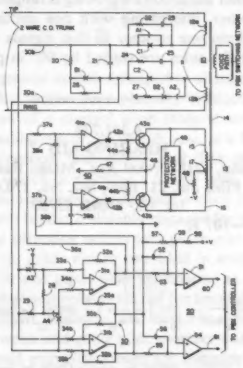


a plurality of capacitors (10, 12) connected in parallel for storing energy.

4,361,732
TRUNK INTERFACE CIRCUIT WITH CURRENT COMPENSATION

Samuel F. Wood, Los Altos Hills, Calif., assignor to Northern Telecom Limited, Montreal, Canada

Filed Feb. 9, 1981, Ser. No. 232,546
Int. Cl.³ G05F *5/00*; H04M *7/14*
U.S. Cl. 179—18 AH **6 Claims**



6. A trunk interface circuit for interfacing a two-wire trunk with a telephone facility, comprising:

a transformer having a core, a compensating winding, and a first winding structure including first and second portions for connection to the two-wire trunk;

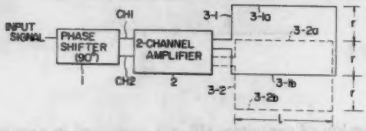
a resistor connected in series current flow relationship between the first and second portions of the first winding for providing a terminating resistance for the two-wire trunk; and

a current regulation means connected to the compensating winding and being responsive to a voltage being developed across the resistor in association with a direct current flow in the trunk, to conduct a direct current via the compensating winding in an amount proportional to the developed voltage and in one of two directions corresponding to a polarity of the developed voltage.

4,361,733
HARD-OF-HEARING AID APPLIANCE

Yozo Marutake, Hino; Tatsuro Fukutome, Inagi; Yasuo Inaba, Kodaira, and Kunihiko Fukuyama, Hino, all of Japan, assignors to Rion Kabushiki Kaisha, Japan

Filed Jul. 28, 1980, Ser. No. 172,739
Claims priority, application Japan, May 21, 1979, 54-62399
Int. Cl.³ H04B 5/00
U.S. Cl. 179—82 4 Claims



1. A hearing aid appliance for creating magnetic fields corresponding to sounds for magnetic coupling to the reception coils of hearing aids, comprising:

input means adapted to receive an input signal corresponding to sounds to be heard;

a 90° phase shifter coupled to said input means for subjecting the input signal to a 90° phase shift, to provide a first channel signal substantially in phase with the input signal and a second channel signal shifted by 90° in phase with respect to the input signal;

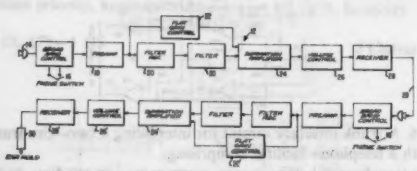
a 2-channel amplifier for amplifying the first and second channel signals; and

two induction loops connected to said amplifier to receive the first and second amplified channel signals respectively, each of said induction loops being arranged in the form of a rectangle having at least two parallel sides, said parallel sides of one of said induction loops and said parallel sides of the other induction loop being arranged in parallel with one another, alternating with one another, and equally spaced from one another so that signals flowing in adjacent parallel sides are shifted by 90° in phase from each other.

4,361,734
HEARING AID

Arthur R. Kahn, 1218 Drexel Ave., Miami Beach, Fla. 33139

Filed Jul. 21, 1980, Ser. No. 170,604
Int. Cl.³ H04R 25/00
U.S. Cl. 179—107 R 1 Claim



1. A hearing aid device composed of a first hearing aid amplifier including a microphone, a receiver and means conducting the two together including amplifier means, filter means, and a summation amplifier;

a second hearing aid amplifier circuit including a hearing aid device composed of a first hearing aid amplifier including a microphone, a receiver and means conducting the two together including amplifier means, filter means, and a summation amplifier;

a sound conducting tube interconnecting the receiver of the first hearing aid and the microphone of the second hearing aid to conduct sound from the first hearing aid amplifier circuit to the second hearing aid amplifier circuit to be reamplified by the second hearing aid amplifier circuit; and

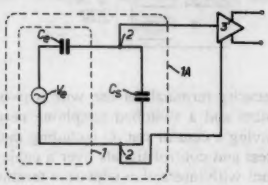
an ear mold;

a housing for the hearing aid amplifier circuits and the tube and a sound conducting tube interconnecting the second hearing aid receiver and the ear mold to provide dual amplified sound to the ear of a wearer.

4,361,735
ELECTRET MICROPHONE CIRCUIT

Edward G. T. Johnson, Woodbridge, and Adrian J. Morgan, Framlingham, both of England, assignors to The Post Office, London, England

Continuation of Ser. No. 935,718, Aug. 21, 1978, abandoned. This application May 5, 1980, Ser. No. 147,342
Claims priority, application United Kingdom, Aug. 24, 1977, 35461/77
Int. Cl.³ H04R 3/00, 19/04
U.S. Cl. 179—111 E 11 Claims



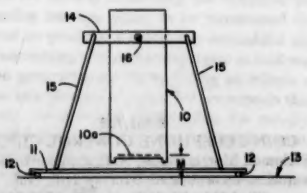
1. An electroacoustic transducer for a microphone, the transducer comprising an electret and means for reducing the impedance of the transducer so that the input impedance requirements of an amplifier connected to the transducer are correspondingly reduced, the impedance reducing means consisting of an additional capacitance substantially greater than the capacitance normally inherent in the electret in parallel with the electret, there being substantially no resistance provided in the transducer in series with the electret.

11. A telephone incorporating a microphone comprising an electret wherein an additional capacitance substantially greater than the capacitance normally inherent in the electret is connected in parallel with the electret.

4,361,736
PRESSURE RECORDING PROCESS AND DEVICE

Edward M. Long, 4107 Oakmore Rd., Oakland, Calif. 94602, and Ronald J. Wickersham, 694 Mt. View Ave., Santa Rosa, Calif. 95401

Filed Dec. 7, 1979, Ser. No. 101,113
Int. Cl.³ H04R 1/20
U.S. Cl. 179—121 R 5 Claims



1. A microphone for transducing acoustical signals without discrimination between direct and random incidence acoustical variations of the sound being transduced comprising a microphone with a diaphragm, said microphone having uniform pressure versus frequency response, said microphone being

mounted in an acoustically insulated chamber having an entry port; mounting means supporting said chamber with said entry port closely spaced from and substantially parallel to a boundary.

4,361,737

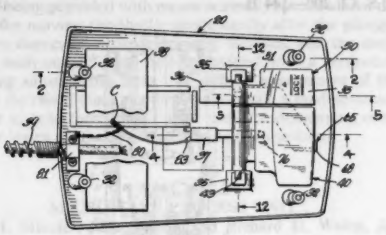
BASE STATION MICROPHONES

Donald W. Peterson, Conneaut, Ohio, assignor to The Astatic Corporation, Conneaut, Ohio

Filed Aug. 11, 1980, Ser. No. 177,113

Int. Cl.³ H01H *9/02, 9/26, 13/70;* **H04R** *1/02*

U.S. Cl. 179—158 R **9 Claims**



1. A base station microphone comprising,

a transmit bar movable from one position to a second position and in the latter position adapted to permit sound transmission via the microphone,

a monitor button movable from one position to a second position, and

interlock means between said transmit bar and said monitor button wherein said transmit bar is held against movement to its said second position until said monitor button is moved to its said second position,

said interlock means comprising a lever having an abutment on one leg positioned for contact with a portion of said monitor button, and an abutment on another lever leg positioned for contact with a portion of said transmit bar and adapted to prevent movement of the latter to its said second position,

movement of said monitor button to its said second position swinging said lever to withdraw the abutment on said lever other leg from interference with movement of said transmit bar to its said second position.

4,361,738

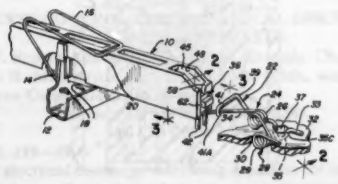
KEY-ACTUATED SWITCH

James Meier, Des Plaines, Ill., assignor to Norlin Industries, Inc., White Plains, N.Y.

Filed Jun. 4, 1980, Ser. No. 156,364

Int. Cl.³ H01H *21/00, 1/12*

U.S. Cl. 200—6 R **15 Claims**



1. A key-actuated switch mechanism comprising: a key; means mounting said key for motion between an actuated position and a released position; first switch contact means including a moveable element biased toward a static position; actuator means operable in response to release of said key to drive said moveable element toward a displaced position and operable in response to actuation of said key to permit said moveable element to return toward said static position; second switch contact means including a fixed element positioned to intercept said moveable element and thereby prevent the complete return of said moveable element toward said static position; said key being arranged so that, after said moveable element is intercepted by said fixed element, said key must travel further to reach said actuated position; said actuator means being arranged to decouple from said moveable element and to leave said moveable element biased against said fixed element upon said further travel of said key; and means biasing said key toward said released position so that upon termination of key actuation said actuator means returns said moveable element to said displaced position.

4,361,739

TWO-DIRECTIONAL SWITCH

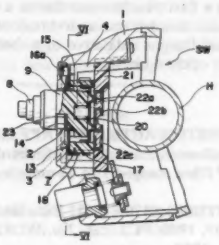
Shoichi Harata, Kasugai, and Hirotsugi Kobayashi, Aichi, both of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Dec. 22, 1980, Ser. No. 218,744

Claims priority, application Japan, Dec. 25, 1979, 54-181112[U]

Int. Cl.³ H01H *15/00, 3/16*

U.S. Cl. 200—16 C **8 Claims**



1. A two-directional switch arranged to change over switch members provided therein for a plurality of functions through sliding movement of a control knob integral with a contact holder and extending out of the switch case, in a first direction and a second direction intersecting said first direction, said two-directional switch comprising a switch case, a guide plate member which is accommodated in said switch case and with which said contact holder is slidably engaged for sliding movement in said first direction within said guide plate member by said control knob, guide means provided in said switch case and engaged with said guide plate member so as to guide said guide plate member and contact holder for simultaneous movement in said second direction, and first engaging means for engagement between said guide plate member and said contact holder and second engaging means for engagement between said guide plate member and said guide means.

4,361,740

SEISMIC SENSOR APPARATUS

Roy Stockdale, Huntington, N.Y., assignor to Napco Security Systems, Inc., Copaigue, N.Y.

Filed Feb. 27, 1981, Ser. No. 238,935

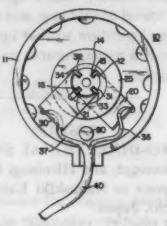
Int. Cl.³ H01H *35/14*

U.S. Cl. 200—61.45 R **9 Claims**

1. A seismic sensor device for responding to shock and vibration, comprising:

a housing having a center post, with a first contact member supported by said post in a first position, said contact member having two upstanding flanges indicative of a first and a second contact, a second contact member supported by said post and positioned above said first contact mem-

ber in a second position, said second contact member having two flanges indicative of third and fourth contacts, an annular member positioned in said housing and between said contact members and having a conductive inner periphery and with a central aperture thereof positioned about said center post, to cause said annular member to be supported in a plurality of positions by each of said contact members with each of said positions indicative of



one flange from said first contact member and one flange from said second contact member supporting the same, whereby said conductive inner periphery together with said two flanges contacting the same provides a closed circuit in a first position and due to a shock or vibration said annular member moves to break contact with at least one of said flanges indicative of a shock condition manifesting an opened circuit.

4,361,741

SWITCH ACTUATOR APPARATUS

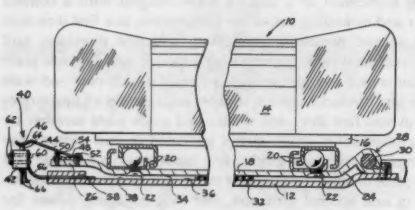
Edward V. Leskoverc, Eastlake, and Richard A. Schwehr, Mentor, both of Ohio, assignors to Towmotor Corporation, Mentor, Ohio

PCT No. PCT/US80/01705, § 371 Date Dec. 19, 1980, § 102(e) Date Dec. 19, 1980, PCT Pub. No. WO82/02173, PCT Pub. Date Jul. 8, 1982

PCT Filed Dec. 19, 1980, Ser. No. 273,890

Int. Cl.³ B60K *28/00*; H01H *3/14*

U.S. Cl. 200—85 A **14 Claims**



1. An apparatus (40,122) for controllably actuating a switch (42,124) mounted on a support frame (12,112) in response to a load being applied to a seat assembly (10,110) comprising:

actuator means (44,56,126,138,140,160) operatively associated with said seat assembly (10,110) and said switch (42,124) for sensing elevational movement of said seat assembly (10,110) relative to said support frame (12,112) and applying an actuating force to said switch (42,124) of a magnitude less than the load applied to said seat assembly (10,110), and for limiting the magnitude of force applied to said switch (42,124) to a preselected maximum value which is substantially less than the load being applied to said seat assembly (10,110);

said actuator means (44,56,126,138,140,160) includes an actuator spring (44,126) having a first end portion (46,128) and a second end portion (48,130), said first end portion (46,130) being contactable with said switch (42,124) and forceably engageable therewith in response to movement of the seat assembly (10,110) towards said support frame (12,112).

4,361,742

VACUUM POWER INTERRUPTER

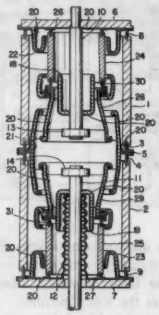
Yoshiyuki Kashiwagi; Shuzo Tanigaki, both of Tokyo; Naoki Kondo, Yokohama, and Tsutae Suzuki, Tokyo, all of Japan, assignors to Kabushiki Kaisha Meidensha and Kabushiki Kaisha Gemvac, both of Tokyo, Japan

Filed Jul. 17, 1980, Ser. No. 170,045

Claims priority, application Japan, Jul. 23, 1979, 54-93526

Int. Cl.³ H01H *33/66*

U.S. Cl. 200—144 B **3 Claims**



1. A vacuum power interrupter comprising a pair of electrical contacts disposed within a substantially cylindrical vacuum vessel so as to be movable into and out of contact with each other, and a shield member of stainless steel disposed within said vacuum vessel, the improvement wherein substantially an entire surface of said shield member facing or surrounding the electrical contacts is coated with a chromium oxide film.

4,361,743

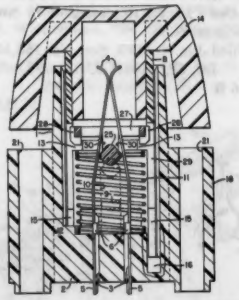
LOST MOTION KEYSWITCH

Robert D. Ayers, Raleigh, N.C., assignor to Stackpole Components Company, Raleigh, N.C.

Filed Mar. 6, 1981, Ser. No. 241,243

Int. Cl.³ H01H *13/52, 3/12*

U.S. Cl. 200—153 V **4 Claims**



1. A lost motion keyswitch comprising a housing having a bottom wall and an open upper end, a plunger having a tubular body extending downwardly in the housing and slidably engaging said housing for movement up and down therein, means limiting upward travel of the plunger to a predetermined elevated position, the lower end of said plunger body being spaced above said bottom wall while the plunger is in said

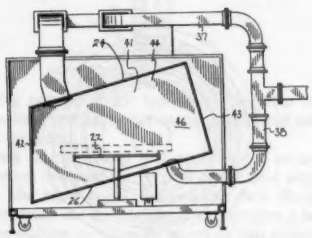
elevated position, a pair of opposed spring contact strips extending through said bottom wall and projecting below it to form terminals, the contact strips also converging upwardly inside the plunger and having upper ends urged toward engagement with each other, a shuttle loosely disposed inside the plunger body and provided with a cross member extending between the contact strips, the inside of the plunger being provided with means for supporting the shuttle while the plunger is in said elevated position, and a coil spring inside the plunger below said shuttle-supporting means and encircling the contact strips but spaced therefrom, said spring normally holding the plunger in said elevated position with said cross member spreading the upper ends of the contacts apart, the plunger being provided with means normally spaced above the shuttle for moving the shuttle downwardly after the plunger has been depressed a predetermined distance, and the inner side of each contact strip being provided with a projection extending substantially from the point of engagement of the strip by the raised cross member downwardly a predetermined distance to hold the contacts apart until the descending cross member slides off the lower ends of said projections.

4,361,744

MICROWAVE PROCESS UNIT

Gary M. Mercier, Minneapolis, and Richard H. Welch, Jr., Princeton, both of Minn., assignors to Despatch Industries, Inc., Minneapolis, Minn.

Filed Jan. 12, 1981, Ser. No. 223,949
Int. Cl.³ H05B 6/70
U.S. Cl. 219—10.55 F **4 Claims**



1. A microwave processing unit comprising a processing cavity having a top and bottom tilted with respect to the horizontal and a generally horizontal turntable platform rotatably disposed therewithin the unit including first wave guide feed means positioned on the top of said processing cavity adjacent one end thereof, and second wave guide means positioned on the bottom of said processing cavity adjacent the other end thereof.

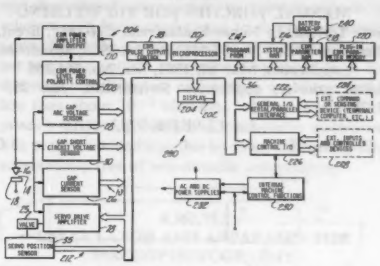
4,361,745

PROCESS CONTROL FOR ELECTRICAL DISCHARGE MACHINING APPARATUS

Gary F. Rupert, Ann Arbor; Thomas M. Kennedy, Chelsea, and John R. MacGregor, Ann Arbor, all of Mich., assignors to Raycon Corporation, Ann Arbor, Mich.

Filed Sep. 21, 1979, Ser. No. 77,581
Int. Cl.³ B23P 1/14
U.S. Cl. 219—69 G **3 Claims**

1. In electrical discharge machining apparatus for machining a workpiece with an electrode by causing intermittent electrical discharge across a gap between said electrode and said workpiece, said apparatus comprising drive means operable to advance and retract the electrode with respect to the workpiece, a power supply for supplying the electrical discharge across said gap, a microprocessor control system for controlling both the electrical discharge from said power supply and the relative positioning of said electrode by said drive means with respect to said workpiece, and means sensing the voltage and current across said gap, the improvement which comprises an amplifier stage (78) supplying a control current for control of the drive means, an input circuit (44) associated with said amplifier stage (78), said input circuit (44) comprising a resistor network having an effective value controlled by a digital output (60) of the microprocessor representing a desired feed rate for the electrode, a second amplifier stage (68), said second



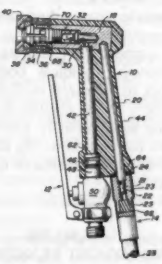
amplifier stage (68) comprising means (70, 72, 74) receiving one analog input signal representative of actual gap voltage and an input circuit (42) comprising a further resistor network having an effective resistance controlled by a digital output (54) of the microprocessor representing a desired gap voltage, the second amplifier stage having an output (76) connected as another input to the first amplifier stage (78).

4,361,746

UNDERWATER CUTTING AND WELDING TORCH

David E. Johnson, Pataskala, and Alexander Toth, Lancaster, both of Ohio, assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Oct. 20, 1980, Ser. No. 198,376
Int. Cl.³ B23K 9/00
U.S. Cl. 219—70 **6 Claims**



1. In an underwater cutting and welding torch of the type including an electrically conductive head including means for gripping an electrode for positioning relative to a workpiece, said head further adapted to permit working fluid to be admitted to a passage in said electrode, said torch including means to connect said head to a source of electrical current and, valve means to admit fluid to said head the improvement comprising:

a one-piece insulating body having a shape adapted to be held comfortably by a user thus enabling said user to easily direct said electrode at said workpiece said body further constructed and arranged, in combination with positive sealing means, to exclude water from contacting the electrically conductive portions of said torch at those locations where said valve means communicates with said head through a passage in said body, where an electrical conductor contacts said means to connect said head to a source of electrical current and between said body and

removable gripping means mounted for electrical contact with said head to grip said electrode thus preventing movement of said electrode during a cutting or welding operation, said body further adapted to prevent escape of working fluid from said torch.

4,361,747

MANUAL TORCHES FOR TIG WELDING

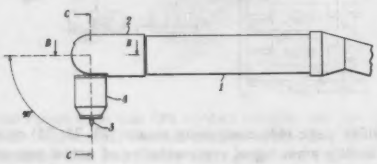
Roberto Torrani, Le Noyer-Fontanivent, CH-1817, Brent, Italy

Continuation of Ser. No. 57,141, Jul. 12, 1979, abandoned. This application May 18, 1981, Ser. No. 264,255

Claims priority, application Switzerland, Jul. 25, 1978, 8015/78

Int. Cl.³ B23K *9/32*

U.S. Cl. 219—75 **2 Claims**



1. A manual torch for TIG welding, comprising, in combination

(a) an insulating handle;

(b) a head fastened to one end of said handle and provided with an insulating casing, said head having a forward portion comprising a first, stationary flank and a second, removable flank, and a rear portion to which cooling fluid conduit means and inert gas conduit means are attached;

(c) a rotatable block arranged between said first and second flanks and having a recess for the flow of the inert protective gas connected to said inert gas conduit means;

(d) an orientable carrier bearing an electrode and supported by said block, said carrier having a circular recess provided around said electrode and connected to said recess of said rotatable block;

(e) a ceramic nozzle surrounding said electrode;

(f) a pivot pin provided on each side of said rotatable block to rotatably support it on said stationary and removable flank, respectively, to allow both the rotation of said rotatable block to a desired inclination angle of said electrode and supply of the electric current thereto; and

(g) an insulating ring partially surrounding said rotatable block to allow its rotation within the maximum inclination range and to avoid dispersion of high frequency arc ignition currents.

4,361,748

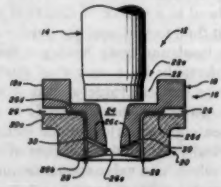
COOLING AND HEIGHT SENSING SYSTEM FOR A PLASMA ARC CUTTING TOOL

Richard W. Couch, Jr., c/o Hypertherm, Inc., P.O. Box A-10 Etna Rd., Hanover, N.H. 03755

Filed Jan. 30, 1981, Ser. No. 230,025

Int. Cl.³ B23K *9/00*

U.S. Cl. 219—121 PP **5 Claims**



1. In a plasma arc cutting apparatus having a nozzle through which the plasma arc is ejected, said nozzle including (i) an inner member with a central passageway that directs said plasma arc from an electrode to a workpiece, (ii) an outer member which generally surrounds said inner member, and (iii) a fluid passage formed generally between said inner and outer members which directs a flow of cooling liquid about said inner member, said fluid passage having a generally radially directed channel portion adapted to establish a generally annular column of said cooling liquid around said plasma, the improvement comprising

a plurality of auxiliary ports formed in said outer nozzle member, each of said ports (i) being in fluid communication with said fluid passage, (ii) extending to the outer surface of said outer member in a direction that directs the cooling liquid carried by said ports away from the cutting area, and (iii) having a cross sectional dimension that provides an enhanced flow rate of the cooling fluid through said nozzle while providing a flow rate through said channels at a value conducive to maximize the efficiency of said cutting.

4,361,749

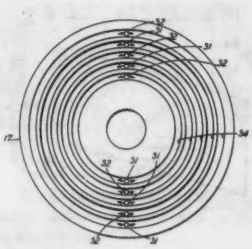
UNIFORMLY COOLED PLASMA ETCHING ELECTRODE

Herbert A. Lord, East Windsor, N.J., assignor to Western Electric Co., Inc., New York, N.Y.

Division of Ser. No. 118,002, Feb. 4, 1980, Pat. No. 4,275,289. This application Nov. 3, 1980, Ser. No. 203,748

Int. Cl.³ B23K *9/00*

U.S. Cl. 219—121 PD **4 Claims**



1. An apparatus for uniformly cooling a substantially planar electrode to within a predetermined temperature range, comprising:

the electrode having a plurality of concentric channels therein separated by a plurality of continuous concentric walls;

all channels have a coolant fluid input and output positioned along a single diameter of the electrode; and

the inputs and outputs of adjacent channels are positioned on opposite sides of the wall therebetween to direct coolant flows in opposite directions in adjacent channels.

4,361,750

DRIP COFFEEMAKER HAVING A CONDENSER ELIMINATING DELIVERY OF STEAM TO THE WATER SPREADER

Frank C. Miklas, Allentown, Pa., assignor to General Electric Company, New York, N.Y.

Filed Aug. 28, 1980, Ser. No. 181,996

Int. Cl.³ A47J *31/057, 31/54;* F24H *1/12;* F04B *19/24*

U.S. Cl. 219—297 **8 Claims**

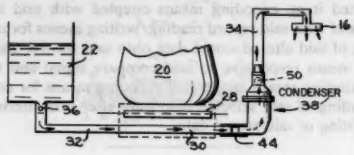
1. In an electric thermostat-controlled drip brewing apparatus having an upright generally C-shaped housing, with a lower horizontal leg having a heated carafe support and an upper leg having a water spreader, the vertical leg enclosing an accessible water reservoir with an apertured bottom wall and

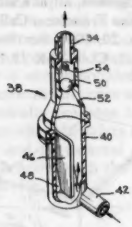
a pump and heating chamber in the housing bottom for delivering heated water by connected tube means through a separate definitive condenser to the spreader, an improvement in said condenser comprising,

a generally cylindrical elongated condenser member larger in cross section than said connected tube means,

a radially directed water inlet from the heating chamber into said member at the bottom thereof,

means in said member imparting a non-swirling upward flow to incoming heated water,





a reducing portion at the top of said member forming a longitudinal vertical outlet connection to said tube means to the spreader,

a captured limited travel ball check valve at said outlet connection disposed for vertical outlet flow only,

whereby the right angle non-swirling flow through said member from the heating chamber provides a large condensing volume to eliminate steam to said spreader.

4,361,751

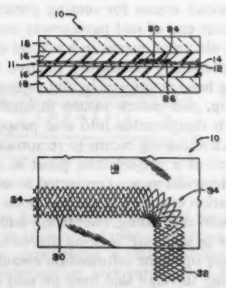
ELECTROCONDUCTIVE WINDOW HAVING IMPROVED BUS BAR

Russell C. Criss, Pittsburgh, and Edward J. Stofka, Sarver, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 171,780, Jul. 24, 1980, Pat. No. 4,323,726. This application Nov. 13, 1981, Ser. No. 321,282

Int. Cl.³ H05B *3/06*

U.S. Cl. 219—522 **8 Claims**



1. A transparent electroconductive window comprising:

a non-electroconductive transparent substrate;

an electroconductive pattern on said substrate;

at least one elongated metallic current carrying member positioned adjacent said pattern at a plurality of points; and

an electroconductive layer between and in contact with adjacent surfaces of said current carrying member and said electroconductive pattern to maintain same in spaced relation, said layer conforming to the surface configurations of both the contacted adjacent surfaces of said member and said pattern to minimize localized high current densities therebetween and having a volume resistivity less than about 10^{-2} ohm-cm., wherein said layer comprises a mixture of finely divided metallic electroconductive particles bound together by fused metal alloy particles substantially free of non-metallic components.

4,361,752

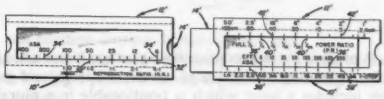
CALCULATOR AND APPARATUS FOR MACROPHOTOGRAPHY

Ralph Holmes, 216 Diana Dr., Burley, Id. 83318

Filed Mar. 5, 1981, Ser. No. 240,842

Int. Cl.³ G06C *3/00*; G06G *1/06*

U.S. Cl. 235—64.7 **2 Claims**



1. A calculator device for use with a camera and variable power electronic flash unit used in macrophotography comprising:

a body member having spaced apart upper and lower members with interconnected end portions, the members having parallel, longitudinally-extending confronting edges defining a guide path;

a sliding member having opposed edges guided by said guide path for translation with respect to said body member;

a first set of cooperating scales positioned on adjacent portions of one side of said body member and a corresponding side of said sliding member, one scale of said first set being a ratio scale having spaced apart indicia representative of the reproduction ratio between the size of the object being photographed and the size of an image of the photographed object on film within the camera, a second of said first set being a sensitivity scale having spaced apart indicia representative of the sensitivities of various types of film used in the camera;

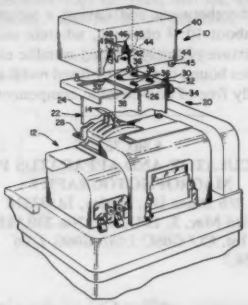
a second set of cooperating scales positioned on adjacent portions of the other side of said body member and said sliding member, one scale of said second set having spaced apart indicia representative of values obtained from said sensitivity scale of said first set of cooperating scales, another scale of said second set having spaced apart indicia representative of different camera exposure aperature sizes; and

a third set of cooperating scales positioned on adjacent portions of the body member and sliding member, one scale of said third set having spaced apart indicia representative of the distance between the object being photographed and the flash, another scale of said third set having spaced apart indicia representative of the variable power ratio of the electronic flash unit, the second and third sets being positioned on said body member and said sliding member in such manner that adjustment of the relationship between the scales of one of said second and third sets automatically adjusts the relationship between the scales of the other of said second and third sets.

4,361,753
PROCESS FOR INTERCONNECTING AN ACTUATOR AND A POSTAGE METER

Keith E. Schubert, West Norwalk; David B. Albright, Stratford; Charles M. Weimer, Norwalk, and Philip Pollak, Jr., Westport, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jul. 11, 1980, Ser. No. 167,516
Int. Cl.³ G07G *1/00*; B23Q *17/00*
U.S. Cl. 235—101 **17 Claims**



1. A process for interconnecting a postage meter and apparatus for operating said postage meter, wherein said postage meter includes a lever which is positionable in a plurality of postage value selecting positions, said apparatus includes means for positioning said postage meter lever, and said lever positioning means includes a member which is positionable in a plurality of predetermined positions respectively corresponding on a one for one basis with one of the lever's predetermined postage value selecting positions, said process comprising the steps of:

a. fixing the spatial relationship between the postage meter and meter operating apparatus;

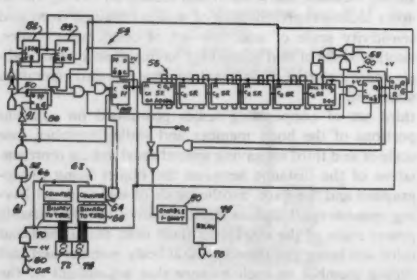
b. fixing the spatial relationship between the postage meter lever and lever positioning means; and

c. engaging said postage meter lever and lever positioning member.

4,361,754
RECORD OPERATED CONTROL SYSTEM FOR A VENDING MACHINE

William R. Hoskinson, Elburn, and Edward K. Miguel, DeKalb, both of Ill., assignors to The Wurlitzer Company, DeKalb, Ill.

Filed Oct. 27, 1980, Ser. No. 200,951
Int. Cl.³ G06K *5/00*; G07F *7/08*
U.S. Cl. 235—381 **25 Claims**

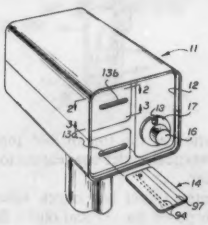


1. A record operated control system for a vending machine comprising: a record reading/writing means, means for effecting relative movement between a record and said reading/writing means, decoding means coupled with said record reading/writing means for decoding data read from a record thereby upon said relative movement, data storage means coupled with said decoding means for receiving and storing said decoded data, comparing means for comparing at least a portion of said stored data to predetermined data and for producing a compare signal if said data compare, credit altering means responsive to said compare signal for altering the stored data in accordance with the amount of credit required to vend a selected item, encoding means coupled with said storage means and with said record reading/writing means for causing writing of said altered stored data onto said record, and vend enable means responsive to said compare signal and to said credit altering means and to said encoding means for enabling the vending of said selected item only after said altering and said writing of said stored data.

4,361,755
MAGNETIC CARD FEED MECHANISM AND IMPACTOR

George B. Sidline, Belmont; John F. Henshaw, Mill Valley, and Eugene S. Elkus, Atherton, all of Calif., assignors to Service Distributors, Inc., San Francisco, Calif.

Filed Jun. 20, 1980, Ser. No. 161,333
Int. Cl.³ G06K *13/00*
U.S. Cl. 235—476 **7 Claims**



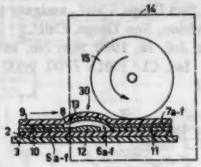
1. A reader encoder apparatus for a card having a longitudinal strip capable of being magnetically encoded, said strip being encoded with a plurality of pulses, and a longitudinal zone to one side of said strip, said card having leading and trailing transverse edges, said apparatus comprising a casing formed with a longitudinal passageway shaped to permit longitudinal movement of said card through said passageway, at least one roller having a transverse axis mounted in said casing positioned to engage said card and drive said card longitudinally of said passageway, first electrical means for turning said roller in both directions, first means for sensing insertion of said card in said passageway and actuating said first electrical means in a first direction to drive said card longitudinally into said casing, second means for sensing presence of said card adjacent the inner end of said passageway and to effect reversal of said first electrical means in a second direction to drive said card longitudinally outwardly relative to said casing, a reading writing head positioned in said passageway in proximity to said strip, and punch means mounted in said casing having a punch reciprocable into said passageway to punch said card, punch actuating means to reciprocate said punch to punch said card at a pre-selected point in said longitudinal zone, second electrical means connected to said head for reading the information encoded in the pulses on said strip as said card is driven into said casing, energizing said punch actuating means at a time as said card is being driven outwardly of said casing dependent upon the information encoded in said pulses and for recording through said head on said strip as said card is being driven out of said casing a pulse train representing a number one less than the number read by said head as said card was being driven into said casing.

4,361,756

PERSONAL CARD COMPRISING A SAFETY SWITCH

Paul Parmentier, Cailly-sur-Eure, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 15, 1980, Ser. No. 216,110
Claims priority, application France, Dec. 19, 1979, 79 31144
Int. Cl.³ G06K *19/06*
U.S. Cl. 235—487 5 Claims



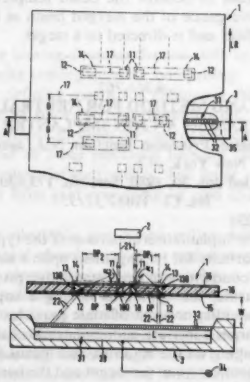
1. A personal card comprising carrier on which a bit combination is stored which is intended to be recognized and which can be read by an external electronic processing device in the activated condition of contact means of a control device which is connected to the electronic processing device, characterized in that the bit combination is stored in an integrated solid-state memory which is accommodated on the carrier and which is isolated from its environment in the switched-off condition of a safety switch which is accommodated on the carrier and which is connected electrically in series with the memory, said memory being electronically readable by the external electronic processing device when the safety switch is switched on by the control device and an external connection which is connected electrically in series with the safety switch is contacted by the control device.

4,361,757

CARD-LIKE DATA CARRIER

Kurt Ehrat, Steinmaur, Switzerland, assignor to Zeag Systems AG, Schlieren, Switzerland

Filed Jan. 12, 1981, Ser. No. 224,437
Claims priority, application Switzerland, Jan. 12, 1980, 207/80
Int. Cl.³ G06K *5/00, 7/10, 19/06*
U.S. Cl. 235—487 24 Claims



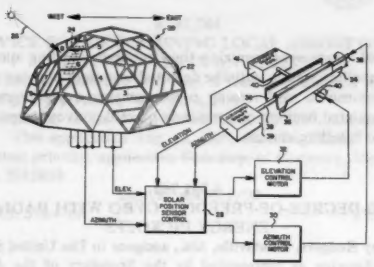
1. A data carrier for storage of encoded machine-readable information such as amounts of money, various times and/or identifying indicia, comprising a flat card-like body and a plurality of light-conducting elements in said body, each of said elements denoting a bit of information and each having a light-admitting inlet portion, a light-discharging outlet portion offset with reference to said inlet portion, and a light-reflecting and conducting median portion intermediate said inlet and outlet portions, said median portion being arranged to conduct light from said inlet portion to said outlet portion.

4,361,758

SUN POSITION SENSOR FOR TWO AXIS TRACKING

Guglielmo E. Rotolo, Des Plains, Ill., assignor to Dow Corning Corporation, Midland, Mich.

Filed Sep. 2, 1980, Ser. No. 183,123
Int. Cl.³ G01J *1/20*
U.S. Cl. 250—203 R 12 Claims



1. A sun position sensing device comprising:

a multifaceted fixed support having exterior planar surfaces each having a predetermined angular relationship relative to the sun,

a plurality of solar sensors each mounted on a different planar surface of a facet of the support and adapted to sense solar energy arriving in a respective azimuth and elevational direction;

data encoding means for a series of respective solar azimuth and solar elevational positions, each position corresponding to one of said plurality of solar sensors and the facet of the support on which it is mounted;

said data encoding means coupled to said plurality of solar sensors wherein sensing of a respective solar azimuth and elevation provides respective solar position data corresponding to the sensed solar position;

a solar collector effective for receiving solar energy in a discrete direction;

drive means for positioning said solar collector in azimuth and elevation and providing collector position data corresponding to the position of said solar collector; and

comparator means receiving said collector position data from said drive means and said solar position data from said data encoding means and providing a drive signal to said drive means if said respective data is not equal.

4,361,759

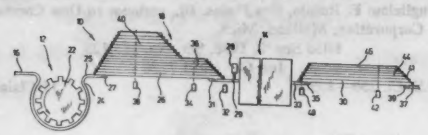
SPEED CONTROL SYSTEM FOR BOTTLING LINE

George W. King, Stouffville, and Peter Fenwick, Toronto, both of Canada, assignors to Canadian Stackpole Limited, Scarborough, Canada

Filed Jan. 15, 1981, Ser. No. 225,303
Int. Cl.³ B65G *47/44*
U.S. Cl. 250—223 R 18 Claims

1. A speed control system for use with a container processing line having a station for capping filled containers, and a station for labelling capped containers, a continuously moving conveyor system for conveying containers from said capping station to said labelling station, said conveyor system having provision when in use for accumulating containers upstream of said labelling station, said speed control system comprising means positioned upstream of said labelling station for sensing a predetermined accumulated backlog of containers; means for detecting the container capping speed of said capping station

and means for controlling the labelling speed of said labelling station, said labelling speed control means being capable of operating said labelling station at a speed less than the container capping speed of said capping station to accumulate containers upstream of said labelling station and said speed



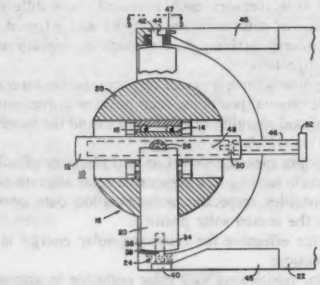
control means synchronizing the container labelling speed of said labelling station with the detected container capping speed in response to said sensing means sensing a predetermined accumulated backlog of containers on said conveyor upstream of said labelling station.

4,361,760

TWO-DEGREE-OF-FREEDOM GYRO WITH RADIANT ENERGY PICKOFFS

Aubrey Rodgers, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 29, 1980, Ser. No. 201,678
Int. Cl.³ G01C *19/28*; G01D *5/28*
U.S. Cl. 250—231 GY **1 Claim**



1. A two-degree-of-freedom gyro utilizing transmitted/reflected radiant energy as wide angle pickoffs comprising:

a. a housing;

b. an outer gimbal carried in said housing, said outer gimbal having a pair of shafts extending from opposite sides thereof for support of said outer gimbal in said housing, the first of said pair of shafts being hollow, the second of said pair of shafts having a flat reflective surface thereon;

c. an inner gimbal carried in said housing in concentric relation with said outer gimbal;

d. a rotor carried in said inner gimbal, said rotor having a reflective/non-reflective pattern on the outer surface thereof;

e. a first source of light for directing radiant energy against said flat surface of said shaft;

f. detector means carried in said housing adjacent said flat surface of said shaft for receiving reflected radiant energy from said flat surface for providing a signal indicative of the position of said shaft relative to said housing;

g. a second source of light for directing radiant energy against said reflective/non-reflective pattern;

h. filter optics means carried in said hollow shaft for directing radiant energy from said second light source to said reflective/non-reflective pattern and for directing reflected radiant energy away from said reflective/non-reflective pattern; and

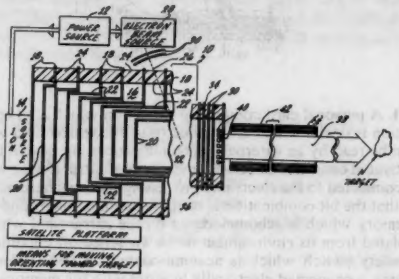
i. sensor means for receiving said reflected radiant energy from said reflective/non-reflective pattern.

4,361,761

MERGED ION-ELECTRON PARTICLE BEAM FOR SPACE APPLICATIONS

James R. Treglio, San Diego, Calif., assignor to General Dynamics Convair Division, San Diego, Calif.

Filed Jul. 10, 1980, Ser. No. 167,242
Int. Cl.³ H01S *1/00*, *9/00*
U.S. Cl. 250—251 **3 Claims**



1. A method of destroying objects comprising the steps of,

providing a source of positive ions in an accelerator,

pulsing said accelerator with a high voltage to produce a beam of said positive ions,

providing an electron beam,

merging said electron beam with said ion beam in a beam merging region at the same velocity as the ions in said ion beam to form a charge neutral beam, and

directing said merged beam at an object to be destroyed as said merged beam emerges from said accelerator,

allowing gas from the ion source exit to escape without entering the beam merging region to reduce beam instability, and

subjecting the merged beam as it exits from said accelerator to an elongated magnetic field which compresses the merged beam to control the beam temperature and to prevent divergence of the merged beam as it leaves said magnetic field and is directed to a target.

4,361,762

APPARATUS AND METHOD FOR NEUTRALIZING THE BEAM IN AN ION IMPLANTER

Edward C. Douglas, Princeton Junction, N.J., assignor to RCA Corporation, New York, N.Y.

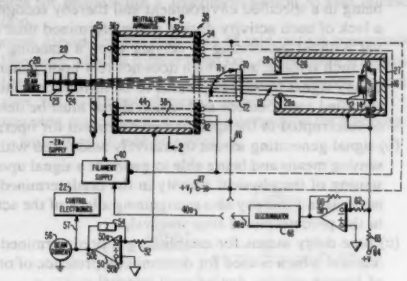
Filed Jul. 30, 1980, Ser. No. 173,630
Int. Cl.³ H01J *37/317*
U.S. Cl. 250—251 **14 Claims**

1. In a particle implantation apparatus of the type for providing a beam of particles for impingement upon a target comprising material of conductive or semiconductive properties on an insulating substrate, the apparatus having a source of ionic particles for providing a beam of ionic particles to the target whereby the target substrate accumulates a charge potential from ions impinging on the material, and means for providing relative movement between the target and the beam at a predetermined rate, wherein the improvement comprises:

a closed loop feedback circuit including controllable means positioned adjacent the beam and being responsive to a first signal for supplying electrons to the beam of ions to neutralize the net charge of the beam; and further including means responsive to the charge potential on the substrate to develop said first signal to control the flow of electrons from the electron supply means to the beam to

neutralize the net charge of the beam and thereby reduce the charge potential on the substrate towards zero;

wherein said electron supply means further includes means



to supply electrons to a plate disposed radially outwardly of the supply means, and means responsive to the flow of electrons to said plate for generating a second signal proportional to the ion beam current.

4,361,763

SMOKE DETECTORS

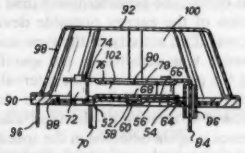
Jack Bryant, Amersham; John H. Howes, and Dennis W. S. Smout, both of Harwell, all of England, assignors to The Radiochemical Centre Limited, Buckinghamshire, England

Filed Nov. 25, 1980, Ser. No. 210,395

Claims priority, application United Kingdom, Nov. 18, 1977, 48154/77; Aug. 10, 1978, 32913/78

Int. Cl.³ H01J *47/02*

U.S. Cl. 250—381 **10 Claims**



1. A smoke sensing detector for use with an indicating device, said smoke sensing detector comprising:

a chamber defining means for defining a chamber adapted for allowing smoke to pass therethrough;

an inner electrode forming the base of said chamber defining means and an outer electrode forming the remainder of said chamber defining means, said inner electrode being insulated from said remainder of said chamber defining means;

a collector electrode positioned within said chamber for dividing said chamber into two regions capable of having different electrical characteristics when a potential difference is applied across said inner and outer electrodes, said two regions being a first ionization region defined by said outer electrode and said collector electrode for having a current passing therethrough which is affected by smoke entering therein, and a second ionization region defined by said inner electrode and said collector electrode for having a substantially constant current passing therethrough which is substantially unaffected by smoke entering therein relative to said current in said first ionization region;

said inner electrode comprising a radioactive source means, and said collector electrode having at least one hole for allowing radiation from said radioactive source means to pass therethrough; and

a plurality of separate and spaced insulating pillars made of insulating material and mounted on said inner electrode and having said collector electrode mounted thereon, such that said collector electrode is insulated from and supported on said inner electrode, said insulating pillars being physically isolated in such a way that, on failure of the detector in service by insulation failure, leakage current from said collector electrode is able to flow only to said inner electrode and not to said outer electrode.

4,361,764

DEVICE FOR DETERMINING LOCAL ABSORPTION DIFFERENCES IN AN OBJECT

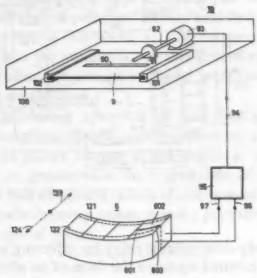
Erich Zieler, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 129,068, Mar. 10, 1980, abandoned. This application Aug. 12, 1981, Ser. No. 292,317

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1979, 2912010

Int. Cl.³ A61B *6/00*

U.S. Cl. 378—14 **2 Claims**



1. A device for determining local absorption differences in an object, comprising an X-ray source for generating a flat, fan-shaped X-ray beam for irradiating the object during an examination, and an X-ray detector which comprises a large number of detection elements for measuring radiation transmitted by the object, the X-ray source comprising a diaphragm having a slit-shaped aperture and an X-ray tube which is arranged behind the diaphragm, characterized in that the device further comprises adjusting means for moving the diaphragm and the X-ray tube with respect to each other and an auxiliary detector for controlling the adjusting means so that the fan-shaped beam is always incident on the X-ray detector in a fixed, predetermined area.

4,361,765

TERNARY LIQUID SCINTILLATOR FOR OPTICAL FIBER APPLICATIONS

Larry A. Franks, and Stephen S. Lutz, both of Santa Barbara, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 1, 1981, Ser. No. 269,234

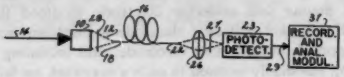
Int. Cl.³ G01J *1/16*; C09K *11/06*

U.S. Cl. 250—486.1 **8 Claims**

1. A radiation-to-light converter comprising a combination of a fluor solvent and at least one fluor solute, wherein said one solute is 5-amino-9-diethylaminobenz (a) phenoxazonium nitrate.

6. A method of detecting and measuring ionizing radiation

comprising exposing to ionizing radiation a measured solution containing 5-amino-9-diethylaminobenz (a) phenoxazonium



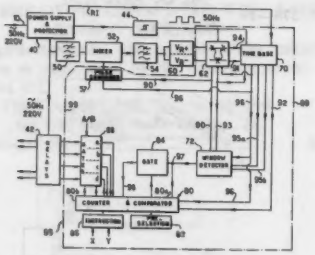
nitrate and transmitting the resulting light pulses through an optical fiber.

4,361,766

REMOTELY-CONTROLLABLE RELAYS

Arnaud de Montgolfier, St. Julien l'Ars, and Marc Laprie, Jaunay Clan, both of France, assignors to Enertec, Montrouge, France

Filed Oct. 15, 1980, Ser. No. 197,047
Claims priority, application France, Oct. 24, 1979, 79 26366
Int. Cl.³ H04Q *9/00*
U.S. Cl. 307—3 **10 Claims**



1. A remotely-controllable relay for effecting an operation in response to a control signal in the form of an alternating ripple voltage superimposed upon an alternating power supply voltage in an electric-power distribution network, comprising:

means arranged to store predetermined parameters of said operation and said control signal, said parameters including an indication of a preselected period of delay required between reception of said control signal and occurrence of said operation, the value of a predetermined constant, and the value of a predetermined unit time interval, said period of delay being equal to the product of said constant and said unit time interval;

means responsive to said storage means and coupled to said network to detect the transmission of a control signal conforming to said stored predetermined parameters relating thereto;

means responsive to said detection means and said storage means and arranged to determine when said period of delay has elapsed following said transmission; and

means responsive to said delay determining means and said storage means and arranged to effect said operation in accordance with said stored predetermined parameters relating thereto.

4,361,767

APPARATUS AND METHOD FOR CONTROLLING ELECTRICAL EQUIPMENT

David C. Pelka, and Baron O. A. Grey, both of Inglewood, Calif., assignors to National Technical Systems, Encino, Calif.

Filed Mar. 24, 1980, Ser. No. 133,348
Int. Cl.³ G08B *13/16*
U.S. Cl. 307—117 **54 Claims**

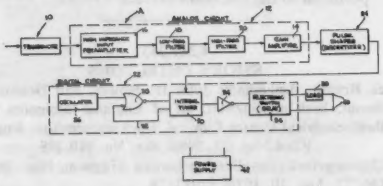
1. An energy conservation apparatus capable of deactivating an energy operable device after a predetermined time interval when no human activity is detected in a specified environment during the predetermined time interval, said apparatus comprising:

(a) passive sensing means for sensing physical activity of the type normally associated with the presence of a human being in a specified environment and thereby recognizing a lack of such activity during a predetermined time interval without generating or relying upon a standing wave for such sensing, and which does not rely upon generation of any signal by said apparatus to be introduced into said specified environment and which signal must be detected or interrupted in the specified environment for operation,

(b) signal generating means operatively associated with said sensing means and being able to generate a signal upon the sensing of the physical activity in the predetermined time interval and thereby also recognizing a lack of the activity in the predetermined time interval,

(c) time delay means for establishing a predetermined time interval which is used for determining presence of or lack of human activity during such interval,

(d) logic circuit means operatively connected to said signal generating means and time delay means, said logic circuit means being operable to effectuate:



(1) connection of the energy operable device to a source of power if human activity was detected in the specified environment during the predetermined time interval,

(2) disconnection of the energy operable device from the source of power if no activity of the type associated with human presence was detected in the specified environment during the predetermined time interval,

(3) re-connection of the energy operable device to the source of power if activity of the type associated with human presence is again detected in the specified environment and to maintain that re-connection for at least the predetermined time interval, regardless of the time period between re-connection, and

(e) output circuit means opertively connected to said logic circuit means and capable of being coupled to an energy operable device under control of said logic circuit means to de-energize the energy operable device if the human physical activity did not occur in the specified environment for at least the predetermined time interval, and to maintain energization of the energy operable device if human physical activity occurred during the predetermined time interval or re-energizing such device if human physical activity re-occurs after the predetermined time interval.

4,361,768

SUPERCONDUCTING SOLITON DEVICES

Thekkemadathil V. Rajeevakumar, Croton-on-Hudson, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,602
Int. Cl.³ H03K *17/92, 19/195*
U.S. Cl. 307—245 **15 Claims**

1. A device for steering Josephson solitons, comprising in combination:

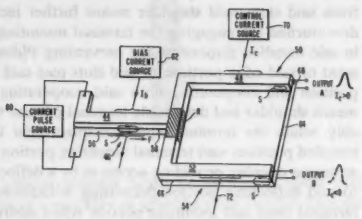
an input Josephson transmission line capable of supporting a Josephson soliton therein,

at least two output Josephson transmission lines which intersect said input line at a common intersection, said output transmission lines being capable of supporting Josephson solitons therein,

means for introducing a Josephson soliton to said intersection,

control means for selecting one of said output transmission lines into which a soliton from said intersection will move, there being no soliton in the nonselected output transmission line, said control means including:

trapping means located at said intersection for trapping an antisoliton at said intersection,



means located at said intersection for dissipating said antisoliton trapped at said intersection said soliton passing through said trapping means, and

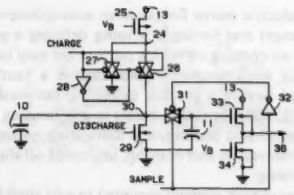
current means for providing simultaneous electrical control currents of opposite polarities coupled to said output transmission lines to attract said soliton into said selected output transmission line and for simultaneously repelling said soliton from said nonselected output transmission line, wherein a single current path is used for the control currents in both of said output transmission lines, the same current flowing in opposite directions in said output transmission lines.

4,361,769

METHOD FOR PERFORMING A SAMPLE AND HOLD FUNCTION

John D. Hatchett, Scottsdale, Ariz., and Andrew S. Olesin, Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 1, 1980, Ser. No. 164,971
Int. Cl.³ G11C *27/02*
U.S. Cl. 307—353 **7 Claims**



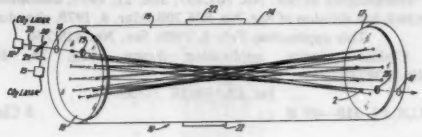
1. A method of operating a sample and hold circuit, comprising: switching a current source to a first capacitor and charging the first capacitor to a predetermined level; leaving the current source in a conductive state and disconnecting the current source from the first capacitor once the predetermined level is reached; connecting a second capacitor to the first capacitor so that the second capacitor can be charged from the first capacitor; disconnecting the second capacitor from the first capacitor; and recharging the first capacitor to the predetermined level.

4,361,770

TECHNIQUE FOR SYNCHRONIZATION OF RAMAN SCATTERED RADIATION

Paul Rabinowitz, Old Bethpage, N.Y., and Bruce N. Perry, Maplewood, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 15, 1980, Ser. No. 216,203
Int. Cl.³ H03F *7/00*
U.S. Cl. 307—426 **8 Claims**



1. Apparatus responsive to a first pair of at least partially overlapping optical pulses for generating a second pair of optical pulses, said apparatus including:

a medium capable of producing stimulated scattering of radiation occupying a volume;

means for defining a multipass optical path through said volume, said optical path intersecting itself;

means for directing a first of said first pair of optical pules along said optical path, said first of said first pair of optical pulses having a full width at half maximum equal to or greater than the transit time of said first of said first pair of optical pulses for one pass of said multipass optical path defining means; and

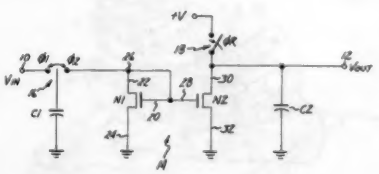
means for directing a second of said first pair of optical pulses along said optical path, said second of said first pair of optical pulses having a full width at half maximum equal to or greater than the transit time of said second of said first pair of optical pulses of one pass of said multipass optical path defining means thereby providing said second pair of optical pulses.

4,361,771

VOLTAGE SUMMATION CIRCUIT

Thomas R. Reinke, Robbinsdale, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 24, 1980, Ser. No. 209,618
Int. Cl.³ H03F *3/72, 3/16*
U.S. Cl. 307—497 **16 Claims**



1. A summation circuit for providing an output signal which represents a summation of a series of first input signals, the summation circuit comprising:

first capacitor means;

second capacitor means, the output signal being a function of a charge on the second capacitor means;

means for charging the first capacitor means as a function of each first input signal;

means for discharging the first capacitor means to provide a first current which is a function of each first input signal; and

means for providing a second current which is a function of the first current, and being connected to the second capac-

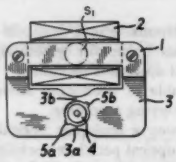
itor means to control the charge on the second capacitor means as a function of the second current.

4,361,772

MICRO STEPPING MOTOR FOR ELECTRONIC WATCHES

Yasuhiro Fukushima, Ichikawa, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Division of Ser. No. 48,187, Jun. 13, 1979, which is a continuation of Ser. No. 761,437, Jan. 21, 1977, abandoned, which is a division of Ser. No. 556,200, Mar. 6, 1975, abandoned.
This application Feb. 8, 1980, Ser. No. 119,786
Claims priority, application Japan, Aug. 29, 1974, 49/103672[U]
Int. Cl.³ H02K 37/00
U.S. Cl. 310—49 R 5 Claims



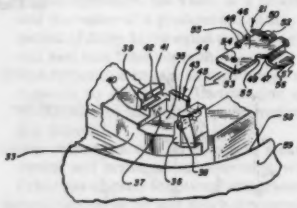
1. A micro stepping motor for electronic wristwatches and the like comprising: a magnetic core; a coil wound on said core; a magnetic stator connected to said core to define therewith a magnetic flux path and having means defining a rotor opening; a rotor having a set of magnetic poles and being rotatably disposed in the rotor opening; and wherein said core and stator are comprised of different magnetic materials, the material comprising said core having a higher saturated magnetic flux density than the material comprising said stator.

4,361,773

COIL RETAINER AND TERMINAL ASSEMBLY

Eugene H. Mokrzycki, St. Paul, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 15, 1980, Ser. No. 216,688
Int. Cl.³ H02K 3/46
U.S. Cl. 310—71 7 Claims



1. In an electrodynamo structure having a field coil provided with connection portions, an improved coil retainer and terminal assembly adapted for automatic winding of said coil comprising:

a coil retainer having spaced channel portions for receiving portions of the field coil and a terminal mounting portion defined by a base, sidewalls upstanding from said base in spaced relationship and having confronting inwardly facing parallel slots, and locking means; and

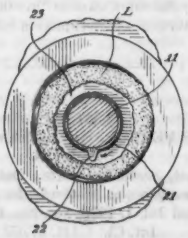
a terminal having a midportion, edge portions slidably received in said slots, a pair of upturned portions including an upturned electrical connection spade and an upturned wire connecting portion on said midportion to which a connection portion of said field coil is electrically connected, and shoulder means engaging said locking means as an incident of said terminal being installed on said terminal mounting portion to lock said terminal to said terminal mounting portion, said shoulder means including a pair of resiliently deflectible portions each arranged to yieldably pass said locking means on the terminal mounting portion during sliding movement of said terminal to the installed position and to be disposed in locking association with said locking means in said installed position, said locking means defining a pair of shoulders extending transversely to the longitudinally extent of said slots to be engaged by said deflectible portions in the installed position of the terminal to prevent withdrawal of the terminal from said slots, said shoulder means further including a downturned tab engaging the terminal mounting portion in said installed disposition for preventing sliding movement of said edge portions in said slots past said installed position and cooperating with said cooperating locking means shoulder and deflectible terminal portion to releasably retain the terminal against displacement from the installed position, said terminal mounting portion defining an access opening providing access as by a deflecting tool to said deflectible portion permitting withdrawal of the terminal from said mounting portion when desired.

4,361,774

LUBRICATION SLINGER WITH LINT SWEEPER FOR A MOTOR

James I. Czech, Lincoln Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sep. 24, 1980, Ser. No. 190,910
Int. Cl.³ H02K 5/10
U.S. Cl. 310—90 10 Claims



6. In an electric motor for use in an atmosphere wherein lint may be present and having a housing defining a portion provided with an opening on which portion lint may be deposited, an armature shaft rotatively journaled in a bearing in said housing and having a portion extending outwardly through said opening, and lubricating means in said housing for providing lubricant to said bearing, and lubricating means defining a lubricant reservoir in said housing, improved oil slinging structure comprising:

an annular slinger element mounted to said shaft for rotation therewith, said slinger element extending through said opening and defining an inner lubricant slinging portion for radially slinging said lubricant in said reservoir and an outer mounting portion at an outer surface of said opening; and

a wiper finger carried by said slinger element mounting portion to be rotatable therewith to sweep seriatim annularly adjacent said outer surface to prevent accumulation of lint on said outer surface adjacent said opening tending to form a wick extending inwardly through said opening to said reservoir.

4,361,775

CURRENT TRANSFER BRUSH

Heinrich Diepers, Höchstadt, and Horst Müsebeck, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 29,127, Apr. 11, 1979, abandoned. This application Mar. 2, 1981, Ser. No. 239,586

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1978, 2817317

Int. Cl.³ H02K *13/00*

U.S. Cl. 310—248 16 Claims

1. A current transfer brush comprising a slider member comprised of a plurality of graphite fiber bundles extending at least approximately perpendicular to the contact surface of the brush, each of said plurality of fiber bundles containing individual filaments of electrically conductive material twisted with said graphite fiber bundles and extending up to said contact surface of said brush, and a frame element retaining only the ends of said bundles facing away from the contact surface of said brush.

4,361,776

COIL ASSEMBLY FOR FLAT BRUSHLESS MOTOR

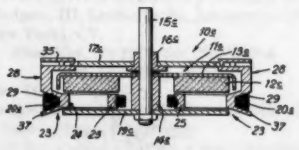
Tsuneyuki Hayashi; Masamichi Ishikawa, both of Kanagawa, and Hiromitsu Miwa, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 8, 1980, Ser. No. 166,901

Claims priority, application Japan, Jul. 11, 1979, 54-96013[U]

Int. Cl.³ H02K *1/18*

U.S. Cl. 310—268 16 Claims



1. A coil assembly comprising: a coil of wire having an axis about which successive turns of the wire extend; and a bobbin including a flangeless plate-like portion having opposed major surfaces extending to margins of a peripheral surface on which said coil is wound with said axis normal to said major surfaces, at least a part of said peripheral surface having a profile which deviates from a parallel to said axis and which includes sections angled in opposite directions in respect to said parallel to the axis so as to prevent movement of said coil relative to said bobbin in the direction of said axis, said profile being generally V-shaped and outwardly convex.

4,361,777

PIEZOELECTRIC TRANSDUCER FOR PRODUCING A SIGNAL DEPENDING ON THE TENSILE FORCE OF A TEXTILE THREAD

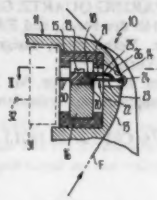
Hermann Mettler, Küssnacht, Switzerland, assignor to Fr. Mettler's Söhne Maschinenfabrik, Arth, Switzerland

Filed Sep. 5, 1980, Ser. No. 184,540

Claims priority, application Switzerland, Sep. 14, 1979, 331/79

Int. Cl.³ H01L *41/02*

U.S. Cl. 310—330 10 Claims



1. A yarn travel monitoring device comprising a piezoelectric transducer for producing a signal depending on the tensile force of a textile yarn, said transducer comprising a piezoelectric element forming at least a part of a resilient vibrator having two ends, a clamping body, one of said ends being fixedly secured to said clamping body, said vibrator being subject to a bending stress by the yarn contacting said vibrator in the range of said other end, said piezoelectric element being further prestressed substantially parallel to the bending stress originating from the travelling yarn by means of a bearing surface element acting upon said resilient vibrator at a point between its two ends, and said bearing surface element being rigidly connected to said clamping body.

4,361,778

UNIVERSAL PIEZOELECTRIC CRYSTAL HOLDER

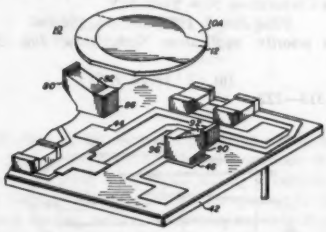
Martin Luff, Glendale Heights, and William G. Skoda, Oak Park, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 28, 1980, Ser. No. 211,012

The portion of the term of this patent subsequent to Sep. 1, 1998, has been disclaimed.

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—348 5 Claims



1. A crystal holder for supporting a piezoelectric crystal having upper and lower surfaces including:

a first element of electrically conductive material having a downwardly sloping first surface for contacting and supporting the lower surface of said crystal at an end thereof;

a second element of electrically conductive material having a downwardly sloping second surface for contacting and supporting the lower surface of said crystal at another end thereof, said second surface facing said first surface in a V-like manner; and

each of said first and second elements being electrically insulated from the other and including a mounting portion facing the other of said first and second elements, said mounting portion being sufficiently massive to prevent said first and second elements from tipping over when mounted on a substrate.

4,361,779

LAMP HAVING A LAMP VESSEL MADE OF QUARTZ GLASS, QUARTZ GLASS AND METHOD OF PREPARING QUARTZ GLASS

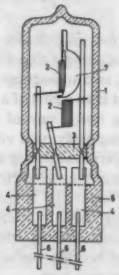
Gerardus H. A. M. van der Steen, and Eddy F. C. Van Hove, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 19, 1981, Ser. No. 225,959

Claims priority, application Netherlands, Oct. 17, 1980, 8000298

Int. Cl.³ H01J *17/16;* C03C *3/06;* H01J *61/30;* H01K *1/28*

U.S. Cl. 313—221 9 Claims



1. An incandescent lamp having a filament, a lamp vessel of quartz glass, and leads extending through said vessel, wherein the improvement comprises said quartz glass containing 0.1 to 3.0% by weight of alkali metal oxide, 0.2 to 5.0% by weight of rare earth metal oxide and 0 to 0.5% by weight of alkaline earth metal oxide.

4,361,780

HALOGEN INCANDESCENT LAMP

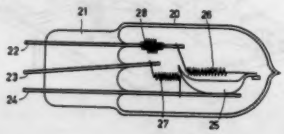
Hermanus Brons, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 5, 1980, Ser. No. 156,544

Claims priority, application Netherlands, Jun. 29, 1979, 7905058

Int. Cl.³ H01K *1/56*

U.S. Cl. 313—222 1 Claim



1. A halogen incandescent lamp having a light-pervious, vacuum-tight sealed lamp envelope which is filled with an inert gas containing hydrogen bromide, in which lamp a tungsten filament is accommodated between current supply conductors which pass through the wall of the lamp envelope and in which envelope tantalum is present as an oxygen getter, characterized in that the oxygen getter consists of tantalum which is alloyed with tungsten in a weight ratio in the range 1/9 to 9/1.

4,361,781

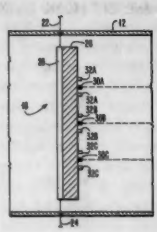
MULTIPLE ELECTRON BEAM CATHODE RAY TUBE

Steven W. Depp, San Jose, Calif., and Bruce P. Piggin, Sherfield English, England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 12, 1980, Ser. No. 148,899

Int. Cl.³ H01J *29/50, 29/46*

U.S. Cl. 313—409 7 Claims



1. An integral structure for use in a cathode ray tube having a fluorescent screen device comprising:

an electrically insulating substrate,

a plurality of cathodes on said substrate to form an array,

a heater associated with said substrate for heating said cathodes and

a plurality of grids on said substrate positioned in spaced relation around and individually surrounding said cathoder said cathodes so as to be substantially coplanar therewith wherein a plurality of individually controllable electron beams are formed which would subsequently strike the screen when appropriate potentials are applied to said cathodes and grids.

4,361,782

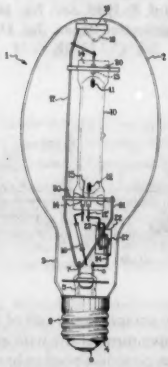
JACKETED DISCHARGE LAMP HAVING OXIDIZABLE FAIL-SAFE SWITCH

Gilbert H. Reiling, Chardon, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 26, 1980, Ser. No. 163,108

Int. Cl.³ H01J *7/44, 17/34, 19/78, 29/96*

U.S. Cl. 315—73 5 Claims



1. A jacketed electric lamp comprising:

a vitreous outer envelope having inleads sealed thereinto;

an arc tube within said outer envelope, said arc tube being made of material which transmits ultraviolet radiation;

said arc tube having electrodes sealed into its ends and containing an ionizable medium which produces radiation including ultraviolet which is normally intercepted at the outer envelope;

and means connecting the electrodes of the arc tube to the inleads of the outer envelope, said means including an oxidizable fuse conductor formed by a thin film of an alkaline earth metal on a non-conductive substrate, said film operating as a low resistance conductive bridge in said connecting means,

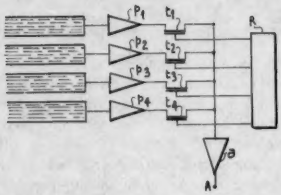
and a vacuum or an inert gas filling in said outer envelope whereby said fuse conductor will oxidize and open-circuit the arc tube only upon fracture of said outer envelope and entry of air into it.

4,361,783

TARGET FOR PICTURE TUBE, TUBE PROVIDED WITH SUCH A TARGET AND PICTURE APPARATUS INCORPORATING SUCH A TUBE

Pierre Felix, and Lucien Guyot, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 28, 1980, Ser. No. 154,112
Claims priority, application France, May 29, 1979, 79 13631
Int. Cl.³ H03K *17/88*
U.S. Cl. 315—374 **7 Claims**



1. A target for picture tube, comprising a flat substrate and a signal plate which conducts electricity, applied to one of the faces of the substrate, whose other face is scanned in operation in point by point manner along successive parallel lines by an electron beam, which supplies the quantity of charges necessary for compensating the effect produced by incident radiation on the substrate, whereby this quantity of charges read in the circuit of the signal plate constitutes the signal corresponding to the scanned point, wherein the signal plate is subdivided into a plurality of electrically independent elementary signal plates, arranged parallel to the scanning direction, each elementary signal plate being separately connected to a preamplifier, the respective preamplifiers being sequentially connected to the output amplifier.

4,361,784

SYSTEM FOR COUPLING THE FOCUS CURRENT TO THE FOCUS VOLTAGE OF A CAMERA TUBE

Robert L. Rodgers, III, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 23, 1979, Ser. No. 96,824
Int. Cl.³ H01J *29/58*
U.S. Cl. 315—382 **3 Claims**

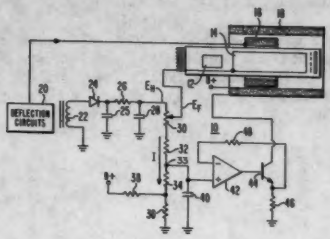
1. An arrangement for slaving the focus current of a camera tube to the focus voltage, comprising:

a source of focus voltage having a predetermined nominal value;

voltage-to-current conversion means coupled to said source of focus voltage for producing a focus-voltage-indicative current proportional to said focus voltage;

a source of reference voltage;

resistance means serially coupled with said source of reference voltage and with said voltage-to-current conversion means for forming a series combination in which all of said focus-voltage-indicative current flows through said source of reference voltage, said resistance means having a magnitude such that the flow of said focus-voltage-indicative current therethrough when said focus voltage is at its predetermined nominal value causes a voltage across said resistance means equal to the voltage of said source of reference voltage; and



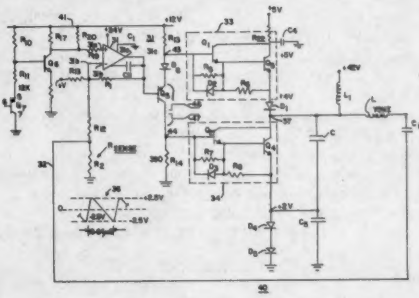
current control means coupled to said series combination and to the focus coil for creating a current through said focus coil proportional to the voltage across said series combination.

4,361,785

VERSATILE VIDEO CRT DISPLAY

John J. Stapleton, East Brunswick, N.J., assignor to K&R Engineering Sales Corporation, Flanders, N.J.

Filed Oct. 1, 1979, Ser. No. 80,587
Int. Cl.³ H01J *29/70, 29/72*
U.S. Cl. 315—389 **50 Claims**



1. Deflection circuit means for providing a linear deflection current through the deflection coil of a cathode ray tube in response to an input ramp signal having a variable slope, a variable frequency and corrected for geometric distortion, comprising sensing means for developing a feedback signal representing the signal across said deflection coil;

means for comparing said input ramp signal having a variable frequency and slope and said feedback signal to develop a linear current through said deflection coil in accordance with said variable slope of said input ramp signal to maintain constant raster size regardless of deflection frequency; and

means for removing said sensing means for developing a feedback signal and restoring energy within said deflection coil during retrace intervals and conserving energy within said deflection coil during trace and retrace intervals.

4,361,786

APPARATUS FOR SYNCHRONIZING DEFLECTION SIGNAL GENERATORS TO THE CORRESPONDING SYNCHRONIZATION SIGNALS IN A TELEVISION SYSTEM

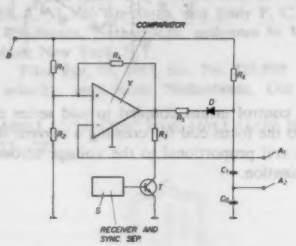
Wilfried Schiller, Hildesheim, Fed. Rep. of Germany, assignor to Blaupunkt Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Jan. 14, 1980, Ser. No. 111,708

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1979, 2902618

Int. Cl.³ H01J *29/70, 29/76*

U.S. Cl. 315—403 **6 Claims**



1. Apparatus for providing vertical deflection control signals in television equipment in synchronization with vertical synchronization signals separated from a television signal by a synch-separator circuit and subject to noise interference, comprising:

a vertical deflection wave generator constituted by a differential amplifier (V) provided with positive feedback means (R_4) for maintaining oscillation by said amplifier and deflection wave forming means (R_5,R_6,D,C_1,C_2) including at least one capacitor and having inputs and an output,

said deflection wave forming means having a deflection wave output connection (A_1) to which said at least one capacitor (C_1) is connected, and having also means (B,R_6) for charging said capacitor during the television vertical trace interval and means (R_5,D) interconnected with said output connection, amplifier output and an input of said amplifier for causing discharge of said at least one capacitor during the television retrace interval, and

means (R_3,T) for applying the vertical synchronization signal output of said synch-separator circuit (S) to the output of said amplifier (V) for advancing the discharge of said at least one capacitor and thereby synchronizing, with substantial immunity to noise effects, the wave produced at said deflection wave output.

4,361,787

SYSTEM FOR CONTROLLING ROTATION OF MOTOR

Kazuo Negishi, and Mitsuo Fujita, both of Yokohama, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Nov. 10, 1980, Ser. No. 205,604

Claims priority, application Japan, Nov. 19, 1979, 54-160159[U]; Nov. 19, 1979, 54-160160[U]; Nov. 20, 1979, 54-160670[U]

Int. Cl.³ B65H *59/38*

U.S. Cl. 318—6 **6 Claims**

1. A control system for controlling the rotation of a motor comprising:

(a) detection means for detecting the rotation of said motor, said detection means having an output signal;

(b) frequency discrimination means for frequency-discriminating the output signal of said detection means;

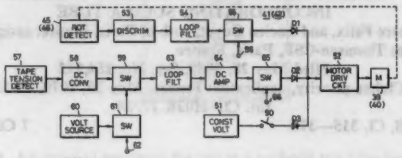
(c) a loop filter for lowering high-frequency components of the output signal of said frequency discrimination means, said loop filter having an input side and an output side, said loop filter comprising:

(i) a resistor;

(ii) means for coupling one terminal of said resistor to the input side of said loop filter; and

(iii) capacitor coupled between the other terminal of said resistor and a reference potential;

(d) a switching circuit connected to the output side of said loop filter, said switching circuit shorting the output side of said loop filter and discharging said capacitor of said



loop filter in a state before starting of the high-speed rotation of said motor, and opening the shorting in a state where said motor is undergoing high-speed rotation; and

(e) a motor driving circuit for driving said motor in accordance with the output signal of said loop filter through said switching circuit, said capacitor being charged with a predetermined time constant due to the output of said frequency discrimination means upon starting of the high-speed rotation of said motor and gradually increasing the output voltage of said loop filter with said predetermined time constant.

4,361,788

DUAL-MOTOR DRIVE CIRCUIT WITH HIGH CURRENT SWITCHING

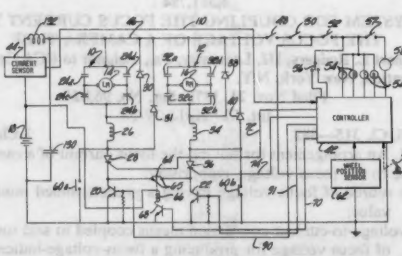
Grant C. Melocik, Chardon, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

PCT No. PCT/US80/00541, § 371 Date May 7, 1980, § 102(e) Date May 7, 1980, PCT Pub. No. WO81/03249, PCT Pub. Date Nov. 12, 1981

PCT Filed May 7, 1980, Ser. No. 245,232

Int. Cl.³ H02P *5/46*

U.S. Cl. 318—83 **13 Claims**



1. An electrically-operated dual-motor drive system of the type having differentially-variable first and second traction motor circuits (**10,12**) including respective first and second variable duty cycle power switches (**20,22**) connecting said motor circuits independently to a power source (**18**) for controlling the operating speeds of the motors in said circuits,

the improvement comprising:

a shunt switch (**64**) interconnecting the power switches

(20,22) to establish a parallel connection of said switches when closed; and

control means (42,44,66,68) for closing the shunt switch in response to a high-current condition in at least one of the traction motors.

4,361,789

SMALL D.C. MOTOR

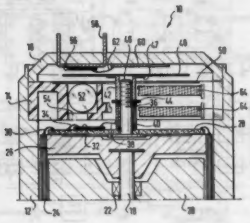
Fritz Faulhaber, 6981 Vernate, Tessen, Switzerland

Filed Nov. 1, 1979, Ser. No. 90,482

Claims priority, application Austria, Nov. 8, 1978, 8002/78; Feb. 8, 1979, 932/79

Int. Cl.³ H02K 29/02

U.S. Cl. 318—254 3 Claims



1. In a D.C. motor, in combination, a rotor including an armature winding comprising a plurality of component coils connected together in star configuration, slip rings connected to the component coils and to the center of the star-configuration coils, and plural electronic control circuits, one for each component coil, each electronic control circuit being connected between one terminal of the respective component coil and an assigned slip ring for controlling the flow of current through the respective component coil, the electronic control circuits and the slip rings being mounted on a supporting plate mounted on the rotor of the motor for rotation with the rotor of the motor.

4,361,790

ELECTROMAGNETIC MOTOR ROTATABLE IN EITHER DIRECTION

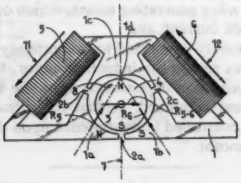
Claude Laesser, La Chaux-de-Fonds; Roberto Zafferri, Lugano, and Jean Depery, Neuchatel, all of Switzerland, assignors to Ebauches S.A., Neuchatel, Switzerland

Division of Ser. No. 165,563, Jul. 3, 1980. This application Dec. 16, 1981, Ser. No. 331,134

Claims priority, application Switzerland, Jul. 6, 1979, 6331/79; Dec. 12, 1979, 11001/79

Int. Cl.³ G05B 19/40

U.S. Cl. 318—696 6 Claims



1. A bidirectional stepping motor comprising:

a rotor constituted by a permanent magnet which is mounted for rotation round an axis and which provides a permanent magnetic field;

a stator including at least two electrical coils, each coil having the shape of a loop and having a median plane, the coils being arranged relative to one another so that their median planes form a dihedral angle, the rotor being arranged within the loops of the electrical coils and the axis of rotation of the rotor being arranged along a bisector of said dihedral angle; and

means for independently applying to said coil electrical pulses and for controlling the polarity thereof, said coils producing magnetic fields in response to said pulses and said rotor being subjected to said magnetic fields.

4,361,791

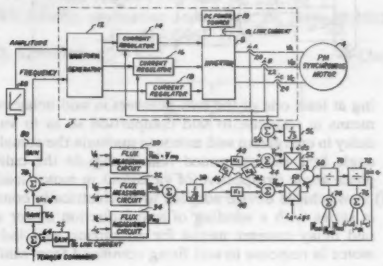
APPARATUS FOR CONTROLLING A PWM INVERTER-PERMANENT MAGNET SYNCHRONOUS MOTOR DRIVE

Allan B. Plunkett, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 12, 1981, Ser. No. 262,862

Int. Cl.³ H02P 5/40

U.S. Cl. 318—723 6 Claims



1. A control system for regulating a frequency command to an alternating power source supplying a permanent magnet motor comprising:

means for measuring the motor flux phasor;

means for rotating said motor flux phasor through a predetermined electrical angle;

means for generating an angle feedback signal dependent on the angle difference between the rotated flux phasor and the stator current phasor, said angle feedback signal varying monotonically during motor operation in the lagging and leading power factor mode;

means for generating an angle command dependent on the difference between an operator commanded torque and actual machine torque; and

means for comparing said commanded angle signal to said angle feedback signal for generating a frequency command for said alternating power source.

4,361,792

DIGITAL INDUCTION MOTOR CONTROL SYSTEM

Ray E. Davis, Jr., Old Lyme; Richard J. Becker, Madison; Robert G. Foster, Clinton; Michael J. Westkamper, Oakdale; Earle J. Timothy, Clinton, and Richard H. Johnson, Ivoryton, all of Conn., assignors to Chesebrough-Pond's Inc., Greenwich, Conn.

Filed May 6, 1980, Ser. No. 147,102

Int. Cl.³ H02P 5/40

U.S. Cl. 318—729 33 Claims

1. A digital induction motor control system for controlling an induction motor based on a calibrated phase angle comprising:

(a) a clock for producing a train of pulses;

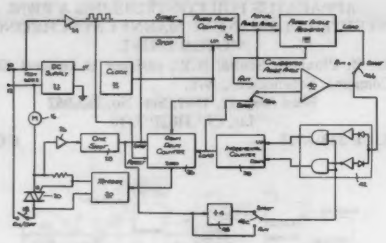
(b) a phase angle counter connected to said clock for counting said pulses to produce a digital number corresponding to the actual phase angle between motor supply voltage and motor current zero crossings;

(c) variable delay counter means connected to said clock for delaying energization of said motor by counting said pulses, beginning with a first digital number, to produce a

firing command when said count has reached a second digital number, said delay occurring following said motor current zero crossing;

(d) phase angle storage means for storing a digital number corresponding to a calibrated phase angle;

(e) digital comparator means connected to said phase angle counter and to said storage means for comparing the actual phase angle in said phase angle counter with the calibrated phase angle in said storage means and for alter-



ing at least one of the two numbers in said delay counter means in response to said comparison so as to vary the delay in energizing said motor to maintain the actual phase angle in a predetermined relationship to the calibrated phase angle irrespective of variations in motor load; and

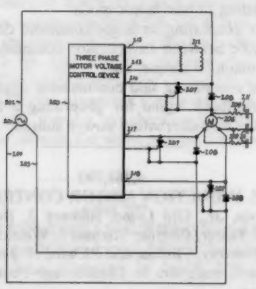
(f) a switchable device adapted to be electrically connected in series with a winding of said induction motor and to said delay counter means for energizing said induction motor in response to said firing command from said delay counter means.

4,361,793

MOTOR VOLTAGE CONTROLLER DEVICE

Daniel E. Nordell, St. Paul, Minn., assignor to Sunbird Corporation, Edina, Minn.

Filed Jun. 5, 1980, Ser. No. 156,679
Int. Cl.³ H02P *1/24, 5/28, 7/36*
U.S. Cl. 318—729 **9 Claims**



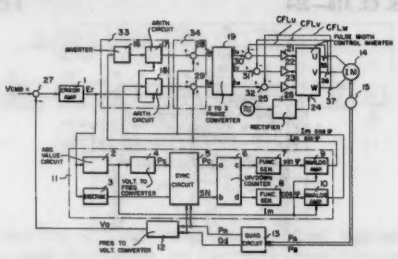
1. An improvement in a motor voltage control unit suitable for use with a motor and having a voltage sense unit for sensing motor voltage, a current sense unit for sensing motor current, a feedback error voltage unit operably connected to said voltage sense unit and said current sense unit for producing a signal related to the phase difference between the motor voltage and the motor current, a saw-tooth signal unit operably connected to said voltage sense unit for producing a cyclical signal, a comparator unit operably connected to said feedback error voltage unit and said saw-tooth signal unit for comparing those signals and a trigger unit responsive to said comparator unit for connecting said disconnecting the motor voltage from the motor, the improvement comprising a soft start unit operably connected to said comparator unit for gradually increasing the motor voltage during the motor starting cycle by initially separating the signal from the feedback error voltage unit from the cyclical signal of the saw-tooth signal unit, and then gradually allowing said signals to coincide.

4,361,794

INDUCTION MOTOR DRIVE APPARATUS

Shigeki Kawada, Hino, and Hiroshi Ishida, Hamuramachi, both of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Dec. 1, 1980, Ser. No. 211,846
Claims priority, application Japan, Dec. 11, 1979, 54/160500
Int. Cl.³ H02P *5/40*
U.S. Cl. 318—800 **11 Claims**



1. An induction motor drive apparatus of the type having a speed detector for detecting a rotational speed of an induction motor, speed command means for producing a command speed and an error amplifier for amplifying a difference between the rotational speed of the induction motor and the command speed, the induction motor being driven by controlling the amplitude of a primary current to vary the amplitude of a secondary current in accordance with the difference between the rotational and command speeds, said apparatus comprising:

two-phase sinusoidal wave generating means, operatively connected to the error amplifier, for generating two sinusoidal signals displaced in phase from one another by $\pi/2$ and whose amplitudes and frequencies conform to the output of the error amplifier;

primary load current arithmetic means, operatively connected to the error amplifier and to said two-phase sinusoidal wave generating means, for generating a primary load current by employing the output of the error amplifier and the output of said two-phase sinusoidal wave generating means;

primary current arithmetic means, operatively connected to said primary load current arithmetic means and to said two-phase sinusoidal wave generating means, for generating a two-phase primary current command by adding the primary load current to the output of said two-phase sinusoidal wave generating means, which output serves as an excitation current; and

means, operatively connected to said primary current arithmetic means and to the induction motor, for driving the induction motor in dependence upon the two-phase primary current command, so that the primary current is amplitude controlled in dependence upon the load on the induction motor.

4,361,795

BATTERY CHARGER POLARITY CIRCUIT CONTROL

Raymond R. Santilli, P.O. Box 26963, Oklahoma City, Okla. 73126

Continuation-in-part of Ser. No. 906,172, May 15, 1978, abandoned. This application Sep. 26, 1980, Ser. No. 191,216
Int. Cl.³ H02J *7/00, 7/10*
U.S. Cl. 320—26 **3 Claims**

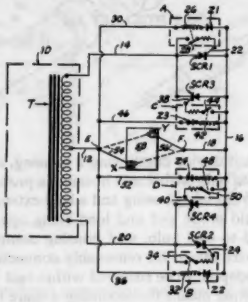
1. In combination with a battery charger including a circuit

for charging a rechargeable storage battery, said battery charger having a transformer including a center tapped secondary winding providing battery charging current at its respective ends and center tap, the improvement comprising:

a battery polarity sensing circuit connected with the respective ends and center tap of the secondary winding;

a first battery cable connected with the secondary winding center tap; and,

a second battery cable connected with the ends of the secondary winding in series with the sensing circuit,



said battery charging circuit including first and second normally open switch means in series with the battery cables and controlled by the sensing circuit,

said first and second switch means each including at least one silicon controlled rectifier and a magnetic reed switch,

said first or said second switch means being closed by battery residual potential to render said battery charging circuit conductive when said first and second battery cables are connected with the terminals of a battery to be charged.

4,361,796

VOLTAGE CONTROL SYSTEM FOR VEHICLES

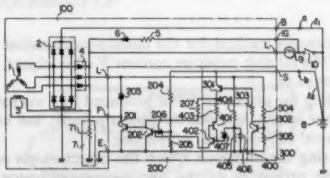
Yoshio Akita, Ichinomiya; Katsumi Itoh, Ohbu; Katsuya Muto, Kariya; Katsutaro Iwaki, Chiryu, and Takeshi Nakamoto, Ohbu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 24, 1980, Ser. No. 190,254

Claims priority, application Japan, Sep. 27, 1979, 54-125120

Int. Cl.³ H02J *7/14, 7/24*

U.S. Cl. 322—99 **7 Claims**



1. A voltage control system for vehicles comprising:

an AC generator installed in a vehicle;

main rectifier means having an output terminal;

auxiliary rectifier means having an output terminal;

a key switch;

indicator means;

a charging and a voltage detecting line;

a battery connected to said output terminal of said main rectifier means through said charging line and to said output terminal of said auxiliary rectifier means through said indicator means and said key switch;

a voltage regulator circuit disposed to detect a terminal voltage of said battery through said voltage detection line such that energization of said generator is controlled in accordance with said terminal voltage;

a power supply control circuit disposed to supply power to said voltage regulator circuit through said voltage detection line only when said key switch is closed; and

warning means connected to the output terminal of said auxiliary rectifier means to operate said indicator means when said AC generator is not generating.

4,361,797

CONSTANT CURRENT CIRCUIT

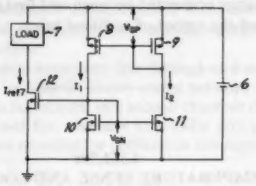
Yoshikazu Kojima, and Masaaki Kamiya, both of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Japan

Filed Feb. 5, 1981, Ser. No. 231,799

Claims priority, application Japan, Feb. 28, 1980, 55-24521

Int. Cl.³ G05F *3/20*

U.S. Cl. 323—316 **8 Claims**



1. A constant current circuit characterized in that a series circuit of a first insulated gate field effect transistor of a first conductivity type and a second insulated gate field effect transistor of a second conductivity type and another series circuit of a third insulated gate field effect transistor of the first conductivity type which is different in a threshold voltage from said first insulated gate field effect transistor and a fourth insulated gate field effect transistor of the second conductivity type which threshold voltage is equal to that of said second insulated gate field effect transistor are connected to a power source in parallel, respectively, gate electrodes of said first and third insulated gate field effect transistors are connected to a connecting point of said third and fourth insulated gate field effect transistors, gate electrodes of said second and fourth insulated gate field effect transistors are connected to a connection point of said first and second insulated gate field effect transistors to form a constant voltage circuit, a circuit in which a fifth insulated gate field effect transistor is connected to a load in series is connected to the power source in parallel, and a gate electrode of said fifth insulated gate field effect transistor is connected to a constant voltage output terminal.

4,361,798

SYSTEM FOR EXTENDING THE VOLTAGE RANGE OF A PHASE-FIRED TRIAC CONTROLLER

Robert J. Tolmie, Jr., Brookfield Center, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 27, 1980, Ser. No. 200,823

Int. Cl.³ G05F *1/455*

U.S. Cl. 323—324 **2 Claims**

1. In a system for controlling voltage to a load, the combination comprising:

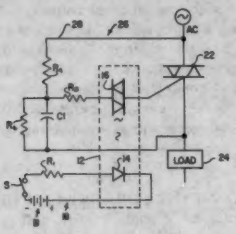
an optically coupled isolator including a light emitting diode and a phototriac spaced relative to said diode;

means for enabling said light emitting diode whereby said phototriac is enabled thereby;

a load triac coupled to said phototriac and connected to the load;

an AC source coupled to said load triac and to said phototriac, and

means for reducing the voltage supplied from said AC source to said phototriac while substantially allowing the



original level of the voltage from the AC source to the load triac, comprising first and second resistors connected in series between said AC source and said phototriac, and a capacitor connected between said first and second resistors and the output of said load triac.

4,361,799

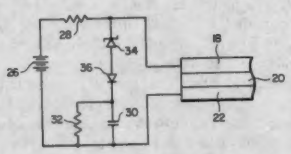
OVER-TEMPERATURE SENSE AND LOCATE DEVICE

Michael A. Lutz, San Carlos, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 134,354, Mar. 27, 1980, abandoned, which is a continuation-in-part of Ser. No. 88,344, Oct. 26, 1979, abandoned. This application Jan. 8, 1982, Ser. No. 338,409

Int. Cl.³ G01R *31/08, 27/26*

U.S. Cl. 324—52 **20 Claims**



1. An over-temperature sense and locate device comprising:

a. an electrical conductor;

b. a dielectric material in contact with said electrical conductor;

c. a solid conductive PTCR polymeric composition in contact with said dielectric material and separated from said electrical conductor by said dielectric material, said solid PTCR conductive polymeric composition being normally conductive and being capable of a massive increase in resistivity at a predetermined elevated temperature at any location along said solid PTCR conductive polymeric composition where said predetermined elevated temperature occurs; and

d. means for sensing said location of elevated temperature, said means electrically connected to said electrical conductor and said solid conductive PTCR polymeric composition, said means comprising means for measuring and comparing the electrical capacitances between said electrical conductor and said solid PTCR conductive polymeric composition before and during exposure to said elevated temperature, the ratio of said capacitance determining the location of said elevated temperature condition.

4,361,800

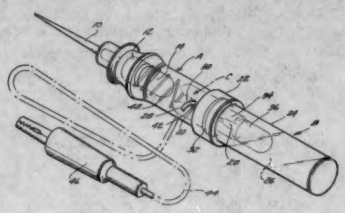
CIRCUIT TEST DEVICE

Adolph Fodali, Lake Hiawatha, and George Gering, Livingston, both of N.J., assignors to S & G Tool Aid Corp., Newark, N.J.

Filed Jul. 14, 1980, Ser. No. 168,073

Int. Cl.³ G01R *31/00*

U.S. Cl. 324—53 **9 Claims**



5. A circuit test device comprising a housing, a bulb, means for mounting said bulb within said housing, a probe mounted to and extending from said housing and a lead extending through said housing, said probe and said load being operably electrically connected to said bulb, said housing comprising a first part, a second part, means for removably connecting said parts and a member adapted to be received within said housing, said member comprising means for mounting a spare bulb thereon.

4,361,801

MICROWAVE METHOD FOR MEASURING THE RELATIVE MOISTURE CONTENT OF AN OBJECT

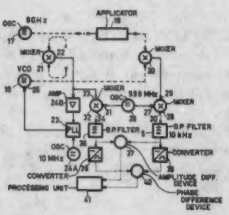
Wolfgang Meyer, Seevetal, and Wolfram Schilz, Norderstedt, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 14, 1980, Ser. No. 168,963

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1979, 2928487

Int. Cl.³ G01R *27/04*

U.S. Cl. 324—58.5 R **7 Claims**



1. A microwave method for the density-independent measurement of the relative moisture content Ψ of an object, comprising the steps of:

(1) providing the object in a field produced by a microwave applicator which, without the object present, has known mechanical and electrical properties;

(2) measuring the influence which the object exerts on the dielectric properties of the microwave applicator at a measuring frequency;

(3) determining a quantity A which is given by

$$A = \frac{\epsilon'(\psi,\rho) - 1}{\epsilon''(\psi,\rho)}$$

where $\epsilon'(\Psi,\rho)$ is the real part and $\epsilon''(\Psi,\rho)$ is the imaginary part of the dielectric constant $\epsilon = \epsilon_0(\epsilon' - j\epsilon'')$ and ρ is the density of the object; and

(4) deriving the moisture content Ψ from a calibrating curve

A(Ψ) with the value of A determined in the preceding step, which calibrating curve is specific to the material of the object and the mechanical and electrical properties of the applicator.

4,361,802

GAS ANALYZER

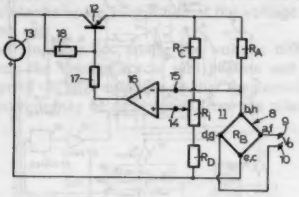
Johannes G. T. Luijpers, Bunnik, Netherlands, assignor to Gould Godart B.V., Bilthoven, Netherlands

Filed Sep. 9, 1980, Ser. No. 185,541

Claims priority, application Netherlands, Sep. 14, 1979, 7906868

Int. Cl.³ G01R *27/02*

U.S. Cl. 324—65 R **3 Claims**



1. A gas analyser comprising a measuring block having two mutually separated channels, a first of said channels being adapted for conducting a reference gas therethrough and a second of said channels being adapted for conducting a gas to be analysed therethrough, a first Wheatstone bridge consisting of resistance wires provided in said two channels of the measuring block, the resistance wires of opposite legs of the first bridge being connected in the same channel, a second Wheatstone bridge, wherein the first Wheatstone bridge forms one leg of said second Wheatstone bridge, and means for controlling feeding current for said second Wheatstone bridge to maintain said second Wheatstone bridge balanced, wherein the leg of said second Wheatstone bridge connected in series with the first Wheatstone bridge consists of a resistance, the physical properties of which correspond to those of the resistance wires of said first Wheatstone bridge, the current per unity of cross-section for said resistance being smaller than for the total resistance of said first Wheatstone bridge.

4,361,803

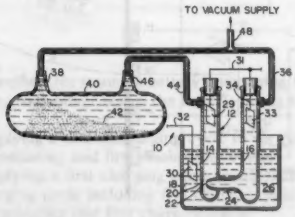
APPARATUS FOR RECIRCULATING SWEEP FLOW ELECTROLYTE WITHOUT A PUMP

Walter R. Hogg, Miami, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Aug. 26, 1980, Ser. No. 181,496

Int. Cl.³ G01N *27/00*

U.S. Cl. 324—71 CP **11 Claims**



1. A particle analyzing apparatus including a vessel for holding sample liquid suspension of particles to be analyzed, a first chamber for containing a body of liquid, an aperture containing means forming a wall between said vessel and said first chamber, said aperture containing means having a sensing aperture provided therein to form a constricted liquid passageway between said vessel and said first chamber, a second chamber for containing a body of liquid, an orifice containing means forming a wall between said first chamber and said second chamber, said orifice containing means having a cleaning orifice provided therein to form a liquid passageway between said first chamber and said second chamber, means for providing an electrical current through said sensing aperture to generate detectable electrical signals with the passage of the particles through said sensing aperture, fluid moving means for providing a pressure difference across said sensing aperture to move a quantity of said liquid suspension from said vessel to said first chamber; means for providing a particle free liquid to said first chamber to form a liquid sheath around a quantity of said liquid suspension from said sensing aperture, the improvement comprising:

said means for providing a particle free liquid to said first chamber comprising fluid conducting means for fluidly coupling said first chamber to said second chamber to provide a fluid recirculating loop;

said fluid conducting means including a filter means for removing particles;

said sensing aperture and cleaning orifice being spaced apart by a predetermined distance which is dependent upon at least one of the sizes of said sensing aperture and said cleaning orifice;

whereby said liquid suspension jets through said sensing aperture and forms said liquid sheath and a pressure differential, which circulates liquid from said second chamber through said filter means to said first chamber to provide said particle free liquid to said first chamber for continuous development of said liquid sheath.

4,361,804

ELECTRICAL TEST INSTRUMENTS

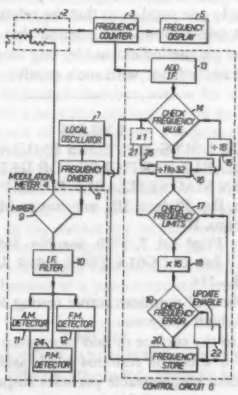
Victor F. Arnold, St. Albans, England, assignor to Marconi Instruments Limited, Chelmsford, England

Filed Jul. 25, 1980, Ser. No. 173,266

Claims priority, application United Kingdom, Jul. 27, 1979, 7926239

Int. Cl.³ G01R *23/14*

U.S. Cl. 324—79 R **8 Claims**

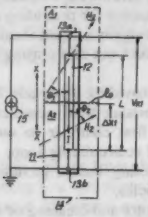


1. An electrical test instrument including means for receiving a modulated carrier signal; a frequency counter for determining the carrier frequency; means responsive to said frequency counter for generating a signal which when combined with said received carrier signal produces a further modulated signal having a predetermined intermediate frequency; and means for measuring the modulation of said further modulated signal.

4,361,805
MAGNETORESISTIVE DISPLACEMENT SENSOR ARRANGEMENT

Akihisa Narimatsu, Tokyo, and Hiroyuki Ohkubo, Chiba, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 27, 1980, Ser. No. 134,543
Claims priority, application Japan, Mar. 30, 1979, 54-36845; Mar. 30, 1979, 54-36847; Oct. 24, 1979, 54-137289
Int. Cl.³ G01B 7/14; G01R 33/02
U.S. Cl. 324—207 49 Claims



1. A magnetic displacement sensor device comprising:

a magnetoresistive element having at least one current path portion formed of ferromagnetic material;

source means supplying a current to said magnetoresistive element to flow along a current path in said at least one current path portion; and

magnetizing means providing magnetic fields to influence said magnetoresistive element and including a first magnetic field and a second magnetic field lying at different mutually intersecting first and second directions in respect to said at least one current path, and occurring in first and second regions, with the direction of each of said first and second magnetic fields being substantially in a respective one of said directions relative to said at least one current path within the respective first and second regions and changing abruptly to the other of said intersecting directions at boundaries between said first and second regions;

said magnetoresistive element and said magnetizing means being mutually displaceable in a predetermined direction relative to one another so that the relative amounts of said at least one current path portion that are influenced by said first magnetic field and by said second magnetic field vary in accordance with such relative displacement.

4,361,806
METHOD USING AQUEOUS EMULSION HAVING MAGNETIZABLE PARTICLES FOR DETECTING FLAWS IN MAGNETIZABLE WORKPIECES

Sei H. Song, Des Plaines, Ill., assignor to Magnaflux Corporation, Chicago, Ill.

Filed Jul. 7, 1980, Ser. No. 166,610
Int. Cl.³ G01N 27/84; G01R 33/12
U.S. Cl. 324—216 10 Claims

1. A method of non-destructive testing for a magnetizable workpiece which comprises:

applying to the surface of said workpiece an aqueous emulsion of a waxy or resinous solid, said emulsion having fluorescent magnetizable particles suspended therein,

creating a magnetic field along said workpiece so that the particles are attracted to imperfections therein,

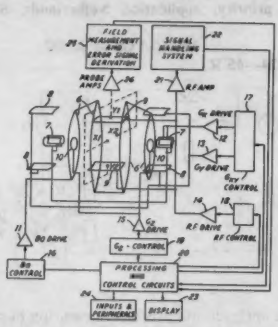
removing sufficient water from said emulsion so that said solid forms an adherent film containing immobilized fluorescent particles which have become attached to imperfections in said workpiece, and

inspecting said workpiece for concentration patterns of magnetic particles located at said imperfections while said fluorescent particles remain adhered to said workpiece.

4,361,807
NUCLEAR MAGNETIC RESONANCE SYSTEMS

Michael Burl, Iver, and Ian R. Young, Sunbury-on-Thames, both of England, assignors to Picker International Limited, Wembley, England

Filed Aug. 11, 1980, Ser. No. 176,913
Claims priority, application United Kingdom, Aug. 10, 1979, 7927971
Int. Cl.³ G01N 27/00
U.S. Cl. 324—309 14 Claims

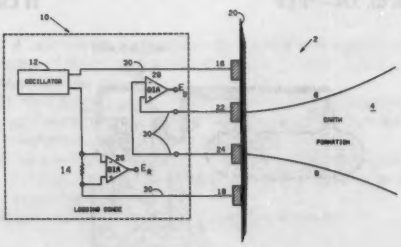


1. A method of determining the distribution, in a body, of chemicals including a chosen element, the method including the steps of: exciting nuclear magnetic resonance for said element preferentially in a region in said body; applying a magnetic field having a gradient in said region to introduce a frequency dispersion in said resonance, said gradient being periodically reversed to provide free induction decay signals having a Fourier transform in the form of a line spectrum; measuring the free induction decay signals; and Fourier transforming the free induction decay signals to obtain an indication of chemical shifts of resonance excited for said elements for a plurality of individual parts of said region as dispersed spectra around the lines of said line spectrum.

4,361,808
DIELECTRIC CONSTANT WELL LOGGING WITH CURRENT AND VOLTAGE ELECTRODES

John W. Kern, Houston; Michael M. Spann, Dublin, and Wilmer A. Hoyer, Houston, all of Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed Mar. 17, 1980, Ser. No. 130,947
Int. Cl.³ G01V 3/24; G01R 25/00
U.S. Cl. 324—366 11 Claims



1. An apparatus for determining the dielectric constant of a portion of an earth formation traversed by a bore hole, comprising:

a current source capable of supplying alternating current of a substantially constant magnitude to said portion of the earth formation;

a reference resistor connected in series with the current source and said portion;

a first differential isolation amplifier for measuring the voltage across said portion of the earth formation;

a second differential isolation amplifier for measuring the voltage across the reference resistor;

means for generating a positive first voltage with substantially the magnitude of the voltage across said portion;

a four-quadrant multiplier having as inputs the voltage across the reference resistor and the positive first voltage generated;

a first amplifier with a predetermined gain connected to the multiplier for amplifying the multiplier output so that the output voltage of the first amplifier is substantially in phase with the voltage across the reference resistor but has substantially the magnitude of the voltage across said portion; and

a second amplifier for taking the voltage difference $E\phi$ between the voltage across said portion and the output voltage of the first amplifier so that the capacitance C_s of said portion may be determined from the relationship:

$$\tan\left|\frac{E\phi}{E_s}\right| = -\omega C_s \frac{E_R R}{\alpha E_R}$$

wherein

E_s = the voltage across aid portion;

E_R = the voltage across the reference resistor;

R = the resistance of the reference resistor;

ω = the angular frequency of the alternating current; and

α = the bore hole correction factor.

4,361,809

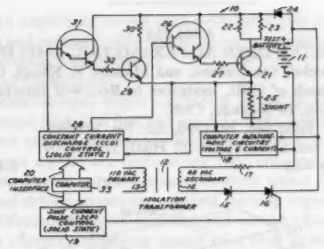
BATTERY DIAGNOSTIC METHOD AND APPARATUS

Ronald J. Bil, Detroit, and Robert H. Lewis, Farmington Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 20, 1980, Ser. No. 208,737

Int. Cl.³ G01N 27/42

U.S. Cl. 324—426 **5 Claims**



1. A method for testing a battery comprising the steps of:

varying the voltage across the battery during a testing cycle by:

(a) applying a first discharging cycle to the battery;

(b) terminating said first discharging cycle;

(c) applying a first charging cycle to the battery, said first charging cycle including five charging pulses;

(d) terminating said first charging cycle;

(e) applying a second discharging cycle to the battery;

(f) terminating said second discharging cycle;

said first and second discharging cycles applying a constant current discharge rate through an active load to the battery; and

measuring the voltage across the battery at selected times during said testing cycle, and comparing the magnitude of the voltage measurements to one predetermined reference value for each voltage measurement and to each other thereby determining the ability of the battery to retain a charge for a desired period of time, said step of measuring the voltage including the following:

measuring a first voltage, V_1, before step (a);

measuring a second voltage, V_2, during step (a);

measuring a third voltage, V_3, between steps (b) and (c);

measuring a fourth voltage, V_4, during step (c);

measuring a fifth voltage, V_5, during step (c);

measuring a sixth voltage, V_6, between steps (d) and (e);

measuring a seventh voltage, V_7, between steps (d) and (e);

measuring an eighth voltage, V_8, during step (e);

measuring a ninth voltage, V_9, during step (e); and

measuring a tenth voltage, V_{10}, after step (f).

4,361,810

ARRANGEMENT FOR MONITORING THE CONCENTRATION OF POTENTIALLY EXPLOSIVE SUBSTANCES IN GAS STREAMS

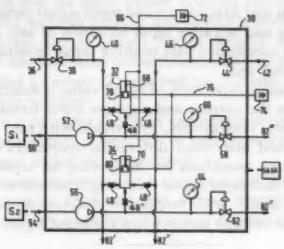
Wolfgang Schlosser, Germering, Fed. Rep. of Germany, assignor to Ratfisch Instrumente, Munich, Fed. Rep. of Germany

Filed Sep. 8, 1980, Ser. No. 184,889

Claims priority, application Fed. Rep. of Germany, May 10, 1980, 3017945

Int. Cl.³ G01N 27/00

U.S. Cl. 324—468 **13 Claims**



1. An arrangement for continuously monitoring the concentration of potentially explosive substances, such as hydrocarbons, in gas streams, particularly for monitoring the concentration of substances in gas streams from coating installations, comprising means defining a chamber; a plurality of flame-ionizers positioned within said chamber; means for supplying to each of said ionizers a requisite amount of fuel gas and means for supplying to each of said ionizers a requisite amount of combustion supporting gas so that a combustion flame is maintained at each ionizer; a plurality of sample conduits each connecting a respective one of said ionizers with a different source of gas to be monitored so that a stream of the gas passes through the flame of the ionizer for measurement of the concentration of the potentially explosive substance therein; and means positioned outside said flame-ionizers and operated for maintaining said chamber at a predetermined temperature.

4,361,811

DIFFERENTIAL AMPLIFIER SYSTEM

Alfred N. Ormond, 11969 E. Rivera Rd., Santa Fe Springs, Calif. 90670

Filed Sep. 29, 1980, Ser. No. 192,086

Int. Cl.³ G06G 7/18; H03F 3/68

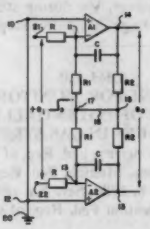
U.S. Cl. 328—127 **2 Claims**

1. A differential amplifier system including, in combination:

(a) first and second substantially identical amplifiers each having positive and negative input terminals and single output terminals;

(b) two first resistances of equal value connected in series between the negative input terminals of said amplifiers;

(c) two second resistances of equal value connected in series between the output terminals of said amplifiers;
(d) a common lead connected between the junction points of said two first resistances and two second resistances, respectively, to provide a negative feedback network which feeds the common mode output signal at said output terminals back to the negative input terminals thereby cancelling the common mode output signal, the common mode gain on the two amplifiers being unity and the open loop gain of the two amplifiers being the same as the open loop gain of the individual amplifiers;
(e) first and second input signal receiving terminals;



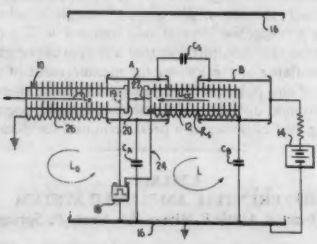
(f) input resistances of equal value connected respectively between said first and second input signal receiving terminals and said negative input terminals of said amplifier;
(g) means connecting said positive input terminals together to ground; and,
(h) integrating capacitors of equal value connected directly between the outputs and negative input terminals of said amplifiers, respectively, to provide with said input resistances and associated differential amplifiers operational integrating amplifiers for integrating an input signal applied to said input signal receiving terminals to provide an output signal with respective differential positive and negative voltage slopes when the input signal is positive.

4,361,812

VOLTAGE STABILIZED PARTICLE ACCELERATOR SYSTEM AND METHOD

Joseph P. Farrell, East Setauket, and Chester C. Thompson, Jr., Roslyn Heights, both of N.Y., assignors to Radiation Dynamics, Inc., Melville, N.Y.

Filed Dec. 4, 1978, Ser. No. 933,562
Int. Cl.³ H05H *5/06, 9/00*
U.S. Cl. 328—233 **11 Claims**



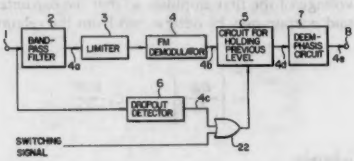
1. A voltage stabilized particle accelerator system comprising a particle accelerator for producing a beam of charged particles;
an accelerator terminal electrically coupled with said particle accelerator;
a high voltage terminal electrically coupled with said accelerator terminal;
a high voltage power supply connected with said high voltage terminal; and
compensating current means electrically coupled with said accelerator terminal and said high voltage terminal and operable to transfer a charge relative to said accelerator terminal such that the voltage at said accelerator terminal is stabilized.

4,361,813

FM AUDIO DEMODULATOR WITH DROPOUT NOISE ELIMINATION CIRCUIT

Yoshizumi Watatani, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 25, 1980, Ser. No. 162,889
Claims priority, application Japan, Jun. 27, 1979, 54-80206
Int. Cl.³ H03D *3/00;* **H04N** *5/94*
U.S. Cl. 329—132 **3 Claims**



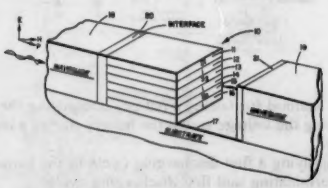
1. A noise elimination circuit for an apparatus for reproducing an audio signal from a record medium having a frequency modulated audio signal recorded thereon, comprising:
an FM demodulator for demodulating the reproduced input signal to produce a reproduced audio signal;
a previous level holding circuit connected to said FM demodulator for holding, during the duration of a signal indicating the discontinuity of said reproduced input signal, an output thereof to a reproduced audio signal level assumed immediately before the occurrence of said discontinuity, said signal indicating the discontinuity of said reproduced input signal being produced in response to a playback track switching signal; and
a deemphasis circuit adapted to receive the output of said previous level holding circuit as an input thereto.

4,361,814

DISTRIBUTED OPTICAL PARAMETRIC AMPLIFIER

Sidney I. Soclof, San Gabriel, and Michael T. Elliott, Carbon Canyon, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 29, 1980, Ser. No. 191,545
Int. Cl.³ H01S *4/00;* **H03F** *3/10, 7/04*
U.S. Cl. 330—4.9 **5 Claims**



1. A microwave parametric amplifier comprising:
a semiconductor body portion comprising a plurality of zones of a first conductivity type, each of said zones having a thickness less than or equal to the Debye length in the semiconductor body portion, each of said zones being separated from one another by an insulating layer, said body portion having a first face portion abutting a first edge of said plurality of zones, and a second face portion

abutting a second edge of said plurality of zones spaced apart from said first face portion;

first interface means adjacent said first face portion for transmitting an electromagnetic wave of microwave frequency into said semiconductor body portion for propagation therein; and

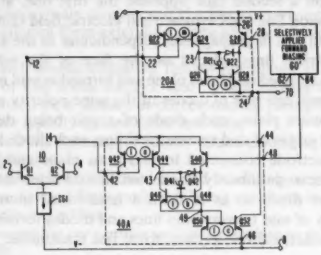
second interface means adjacent said second face portion for receiving an electromagnetic wave of microwave frequency propagating in said body portion.

4,361,815

OPERATIONAL AMPLIFIER WITH PROGRAMMABLE GAIN

Otto H. Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,682
Int. Cl.³ H03G *3/30*
U.S. Cl. 330—254 **24 Claims**



1. An amplifying circuit with switchable gain comprising:

first and second supply terminals for receiving an operating potential therebetween;

an output terminal;

differential-input amplifying means receiving operating potential from said first and second supply terminals, having first and second input terminals at which first and second input signals are respectively received, and having first and second output connections from which first and second drive currents are supplied, varying responsive to the difference between said first and second input signals;

first current amplifying means of a type having an input circuit for receiving said first drive current, having an output circuit connected between said first supply terminal and said output terminal for conducting current $-G$ times as large as said first drive current, where G is a positive number, and responding to a first control signal to determine the value of said positive number G;

second current amplifying means of a type having an input circuit for receiving said second drive current, having an output circuit connected between said output terminal and said second supply terminal for conducting current H times said second drive current where H is a positive number, and responding to a second control signal to determine the value of said positive number H; and

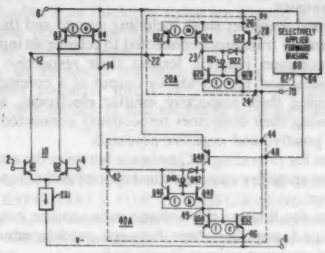
means for selectively applying said first and second control signals to said first and second current amplifying means, respectively.

4,361,816

CURRENT MIRROR AMPLIFIERS WITH PROGRAMMABLE GAIN

Otto H. Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,139
Int. Cl.³ H03F *3/45;* H03G *3/30*
U.S. Cl. 330—288 **27 Claims**



23. A programmable current amplifying circuit comprising:

input signal and output signal terminals;

a current mirror amplifier having input and common connections and an input circuit coupled therebetween for receiving an input current, and having at least one output connection and an output circuit coupled between said output and common connections, said output circuit for providing a current G times said input current, where G is a positive number;

means for connecting the input and common connections of said current mirror amplifier to said input signal and output signal terminals, respectively;

switch means responsive to a control signal for selectively connecting at least one said output connection of said current mirror amplifier to a source of operating potential; and

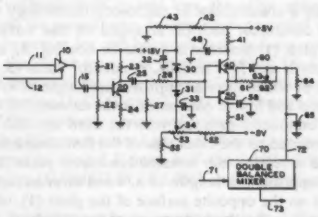
means for selectively applying said control signal to said switch means.

4,361,817

BI-PHASE MODULATOR/DEMODULATOR

HarryF. Stillwell, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 27, 1980, Ser. No. 200,795
Int. Cl.³ H04L *27/20, 27/22*
U.S. Cl. 332—9 T **2 Claims**



1. A bi-phase modulator-demodulator circuit for converting uni-polar to bi-polar signals, comprising:

a tri-state logic gate having first and second inputs for receiving first and second digital signals and having an output;

a first amplifier stage including a first transistor having a base electrode connected to receive the signal from the

output of said tri-state logic gate and having an emitter electrode and a collector electrode;

impedance means for interconnecting said electrodes of said first transistor between sources of first and second potential so as to allow the signal at the collector electrode to swing linearly by a predetermined voltage amount in either direction from a reference potential;

means for providing DC isolation between the output of said tri-state logic gate and the base electrode of said first transistor

a second amplifier stage including second and third complementary transistors connected to receive an input signal at a common junction joining their respective base electrodes, and to provide an output at a common junction joining their respective emitter electrodes, and further having their collectors respectively connected to sources of positive and negative potential;

means for providing DC isolation between the output of said first amplifier stage and the input of said second amplifier stage;

means for limiting the voltage swing at the output of said second amplifier stage between predetermined positive and negative voltage levels; and

a double balanced mixer having a first input connected to receive the signal from the output of said second amplifier stage and having a second input and an output.

4,361,818

BALANCED CONVERTER FOR MICROWAVE RANGE

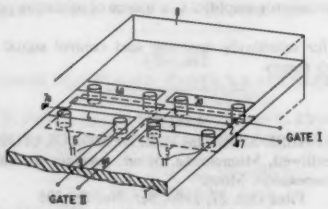
Klaus Otremba, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 23, 1980, Ser. No. 162,158

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1979, 2929522

Int. Cl.³ H01P *5/10*

U.S. Cl. 333—26 **9 Claims**



1. A balanced converter for the microwave range, characterized by a construction in microstrip technology with a first metallic conductor path (2) arranged on one surface of a dielectric plate (1) mounted in a metallic housing (8), and second, third, fourth and fifth metallic conductor paths (3, 4 and 3*a*, 4*a*) each of which have an approximate length of λ/4 and with the second and fourth conductor paths mounted on one side of the first conductor path and with the third and fifth conductor paths mounted on the other side of the first conductor path (2), sixth and seventh wider metallic conductor paths (5, 6) which have an approximate lengths of λ/4 and form an earth line and mounted on the opposite surface of the plate (1), where λ is a wavelength in the operating range of the converter, the ends of said sixth and seventh conductor paths electrically connected to said metallic housing (8), said second and third conductor paths connected to said sixth conductor path, said fourth and fifth conductor paths connected to said seventh conductor path, and said second and fourth conductor paths (3, 4) which are arranged on one side of the first conductor path (2) are each connected at their ends to eighth and ninth conductor paths (9, 9*a*) which are mounted on said one side and extend in the plane of said plate at right angles to other paths (FIG. 1).

4,361,819

PASSIVE SEMICONDUCTOR POWER LIMITER FORMED ON FLAT STRUCTURE LINES, AND AN ULTRA-HIGH FREQUENCY CIRCUIT USING SUCH A LIMITER

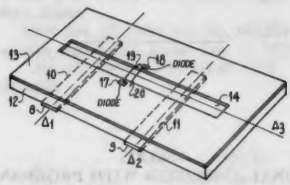
Gilles Sillard, and Michel Baril, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Aug. 7, 1980, Ser. No. 176,100

Claims priority, application France, Aug. 7, 1979, 79 20230

Int. Cl.³ H01P *1/22;* H04B *1/16*

U.S. Cl. 333—109 **11 Claims**



1. A passive semiconductor power limiter, comprising at least two parallel-strip transmission lines having an asymmetrical electric field configuration, formed by two conducting strips placed on the first face of a dielectric substrate wafer and having parallel axes of propagation and by a single mass plane placed on a second face opposite the first one, at least one transmission line with symmetrical electric field configuration having an axis of propagation perpendicular to the axes of said asymmetrical lines, placed on the face of the substrate on which is situated said mass plane and formed in said mass plane, and at least one pair of diodes of the same polarity and placed in said mass plane, each diode of a pair being disposed on opposite edges of said symmetrical line, each diode having the same electrode connected to said mass plane and having its other electrode directly connected to said same electrode of the other diode so as to form a head-to-tail mounting, the assembly of said transmission lines and diodes forming at least two symmetrical line-asymmetrical line transitions.

4,361,820

HYBRID MICROWAVE CIRCUIT

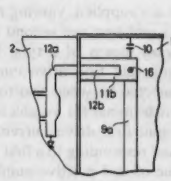
Morikazu Sagawa, Kawasaki; Mitsuo Makimoto, both of Yokohama, and Sadahiko Yamashita, Sagamihara, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Oct. 15, 1980, Ser. No. 197,331

Claims priority, application Japan, Oct. 17, 1979, 54-134573

Int. Cl.³ H01P *1/202, 5/08, 7/04*

U.S. Cl. 333—206 **5 Claims**



1. A microwave filter comprising an outer conductor having an opening, at least one inner conductor supported in said outer conductor, and a strip transmission line forming part of an external strip-line circuit and comprising a dielectric substrate extending between said external circuit and said inner conductor through said opening, supporting said inner conductor, and a thin layer of conductive strip on said dielectric substrate extending from said external circuit through said

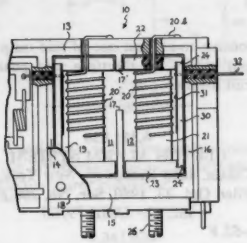
opening and electrically isolated from said outer conductor to a point spaced from said inner conductor.

4,361,821

CAPACITOR COUPLING ARRANGEMENT FOR UHF RESONANT STRUCTURE

George S. Dubovsky, Forest; Henry A. Schaefer, Lynchburg, and Ralph R. Sherman, Forest, all of Va., assignors to General Electric Company, Lynchburg, Va.

Filed Apr. 13, 1981, Ser. No. 253,306
Int. Cl.³ H03H 7/01
U.S. Cl. 333—219 **11 Claims**



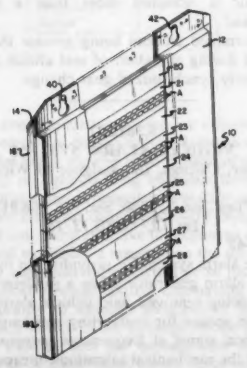
1. An improved coil and capacitor assembly for use in ultra-high frequency radio circuits and the like comprising:
   a. an insulating form extending along an axis for receiving a coil;
   b. first and second insulating flanges positioned at opposite ends of said form, each of said flanges having a groove positioned on a surface at corresponding facing locations that are equally spaced from said axis;
   c. an insulating member positioned in and extending between said grooves;
   d. a metallic plate positioned on said insulating member on a surface thereof facing said insulating coil form to provide capacitive coupling;
   e. and means for connecting said metallic plate to an external circuit.

4,361,822

MAGNETIC PALLET

David T. Adler, 110 Dumbarton Dr., Huntington, N.Y. 11743

Filed Aug. 18, 1981, Ser. No. 293,950
Int. Cl.³ H01F 7/02
U.S. Cl. 335—303 **9 Claims**



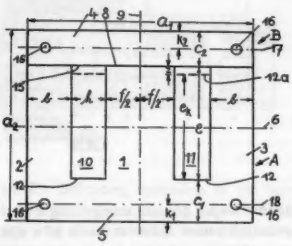
1. Magnetic holding apparatus comprising:
first and second metallic plates; and
a plurality of individual polymer magnetic materials in strip configuration interposed between said metallic plates, and in contact therewith to form an enclosure to generate a substantially continuous magnetic field across each of the surfaces of said plates;
with said individual strip materials each exhibiting North and South polarities across opposing surfaces thereof, and arranged in a double layer thickness in which a North polarity surface of one strip is positioned in contact with a South polarity surface of another strip, and wherein adjacent double layer thickness strips are aligned in opposite magnetic polarity relationship at the points of contact with said metallic plates;
whereby an enhanced magnetic circuit is produced and increased magnetic forces of attraction are generated across each surface of said enclosure forming plates.

4,361,823

CORE LAMINATIONS FOR SHELL-TYPE CORES, ESPECIALLY FOR TRANSFORMERS

Karl Philberth, and Bernhard Philberth, both of Puchheim, Fed. Rep. of Germany, assignors to Wilfried Ernst Sawatzky, North Balwyn, Australia

Filed Nov. 26, 1979, Ser. No. 173,243
Claims priority, application Fed. Rep. of Germany, May 19, 1979, 2920365
Int. Cl.³ H01F 27/24
U.S. Cl. 336—212 **21 Claims**



1. Core laminations for shell-type cores, especially for transformers comprising a plurality of core laminations arranged in layers, each of said core laminations comprising an E-part and an I-part, two said I-parts being formed from the stamped out window parts of two E-parts stamped out with their legs turned toward one another, each of said core laminations having a center leg, two outer legs parallel thereto at a certain distance, and two yokes connecting the ends of said legs, one yoke which will be called the jointlessly connected yoke, being connected without joints to said legs, the other yoke, which will be called the parted yoke, having joints provided between itself and the center leg and between itself and the outer legs,
   wherein the length (e) of each window (**10** or **11**) is greater than 3 times and less than 3.5 times half the width (f/2) of the center leg (**1**) ($3f/2 < e < 3.5f/2$) and wherein the width (c_1) of the jointlessly connected yoke (**5**) and the width (b) of each of the two outer legs (**2** or **3**) are each at least 1.1 times and at most 1.5 times half the width (f/2) of the center leg (**1**) ($1.1f/2 \leqq c_1 \leqq 1.5f/2$ and $1.1f/2 \leqq b \leqq 1.5f/2$) and
   wherein the difference between the width (c_1) of the jointlessly connected yoke (**5**) and the width (c_2) of the parted yoke (**4**) is at least 0.1 times half the width (f/2) of the center leg (**1**) ($c_1 - c_2 \cong 0.1f/2$) and the width (c_2) of the parted yoke is substantially equal to half the width (f/2) of the center leg ($c_2 \approx f/2$) and
   wherein the sum of the width (c_1) of the jointlessly connected yoke (**5**) and the width (c_2) of the parted yoke (**4**) is at least 2.1 times and at most 2.5 times half the width (f/2) of the center leg (**1**) ($2.1f/2 \leqq c_1 + c_2 \cong 2.5f/2$) and the

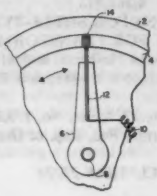
length (e) of each window (**10** or **11**) is equal to half the length ($a_1/2$) of the parted yoke (**4**) ($e=a_1/2$) and equal to the sum of half the width ($f/2$) of the center leg (**1**), the width (h) of each window (**10** or **11**) and the width (b) of each of the two outer legs (**2** or **3**) ($e=f/2+h+b$) and the width (c_2) of the parted yoke (**4**) is equal to the width (h) of each window (**10** or **11**) ($c_2=h$).

4,361,824

SLIDEWIRE WIPER CONTACT

Bertil Eck, Warrington, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 10, 1981, Ser. No. 291,871
Int. Cl.³ H01C *10/32*
U.S. Cl. 338—171 **7 Claims**



1. A slidewire wiper contact comprising a plurality of substantially constant outer diameter coils of a spirally wound electrically conductive wire,

a coil support connected to said coils to coaxially support said plurality of coils,

a support arm attached to said coil support for supporting said coil support and said support arm being made of a plastic material and said coils are each partially embedded in said material,

means for driving said support arm to urge said plurality of coils across a resistance element contacted by an outside surface of said coils.

4,361,825

AUTOMATIC TRAIN-LINE AIR BRAKE PRESSURE MONITORING SYSTEM

James F. Shockley, Ft. Washington, Md., assignor to Southern Railway Company, Washington, D.C.

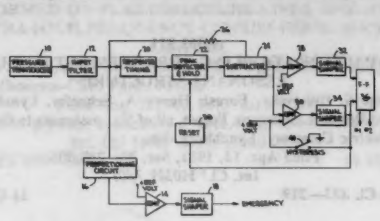
Filed May 16, 1980, Ser. No. 150,665
Int. Cl.³ B60Q *1/00*
U.S. Cl. 340—52 C **12 Claims**

1. An automatic train-line air brake pressure monitoring system, comprising:

peak detector and hold circuit means for determining the peak voltage of an input voltage signal representing the air pressure in the air brake system;

means for subtracting a signal representing the present peak voltage of the input signal from a previously detected peak voltage of the input signal to provide a subtraction output signal;

output means responsive to said subtraction output signal for generating output signals representative of the air brake pressure; and



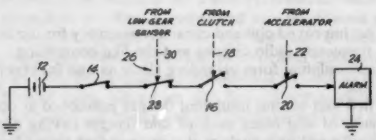
means responsive to at least one of said output signals from said output means for resetting said peak detector and hold circuit means.

4,361,826

CLUTCH ALARM SYSTEM

Restituto P. Catala, 4648 Broadway, New York, N.Y. 10040

Filed Oct. 23, 1980, Ser. No. 200,252
Int. Cl.³ G08B *19/00*
U.S. Cl. 340—52 F **12 Claims**



1. An alarm system for a motor vehicle of the type having a manually operated clutch and a manually operated accelerator comprising

an alarm device operative when energized to produce an alarm;

means for preventing said energizing at least during starting said motor vehicle into motion and being effective during small values of operation of said accelerator and ineffective at large values thereof;

first and second normally open switches in series between an electrical power source and said alarm device;

first means for closing said first switch whenever said clutch is actuated;

second means for closing said second switch whenever said accelerator is actuated more than a predetermined amount; and

said predetermined amount being greater than an amount employed during actuation of said clutch during startup and properly synchronized gear change.

4,361,827

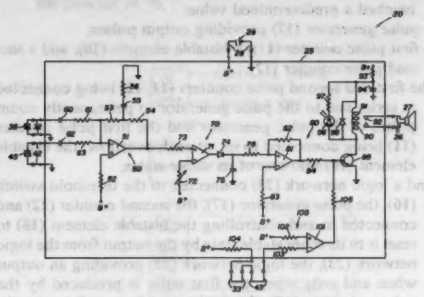
VEHICLE ALARM SYSTEM

David A. Geller, Chicago, Ill., assignor to Wico Corporation, Niles, Ill.

Filed Jun. 5, 1980, Ser. No. 156,811
Int. Cl.³ G08B *13/16*
U.S. Cl. 340—65 **6 Claims**

1. A vehicle alarm system for providing an operating signal to operate an alarm generator when a predetermined part of the vehicle is being removed, said vehicle alarm system comprising pick-up means for converting mechanical vibrations into an electrical signal at frequencies corresponding to the frequencies of the mechanical vibrations, means for attaching said pick-up means to a portion of the vehicle which is mechanically coupled to the predetermined part, filter means coupled to said pick-up means to provide a filter signal only in the presence of an electrical signal with frequencies exceeding a

predetermined frequency, comparator means coupled to said filter means and being responsive to a filter signal exceeding a predetermined amplitude to provide a comparator signal, and

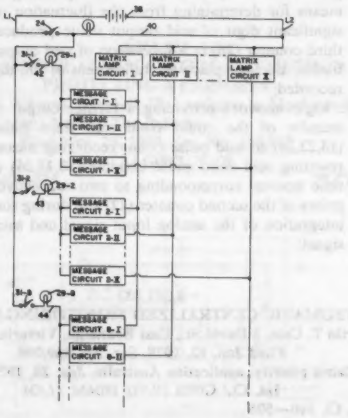


circuit means coupled to said comparator means and being responsive to the comparator signal to provide an operating signal to operate the alarm generator.

4,361,828
AUTOMOTIVE COMMUNICATION

Wanda H. Hose, 24 Shadyrest Rd., South Yarmouth, Mass. 02664

Filed Jul. 18, 1980, Ser. No. 170,099
Int. Cl.³ B60Q *1/00*; G08C *9/08*; G09F *9/00*
U.S. Cl. 340—107 **10 Claims**

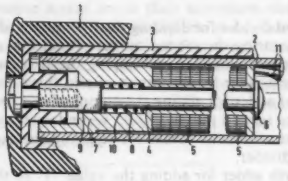


1. A visual communication device for vehicles comprising:
(a) an opto-electrical display unit including a viewing screen adapted for being viewed from outside of the vehicle and a plurality of light-emitting elements forming part of a display circuit and arranged in a matrix on said viewing screen, said elements being selectively energizable to emit light, said unit being effective to receive an electrical pulse pattern and to display a message on the screen that corresponds to said received electrical pulse pattern,
(b) an electrical message control unit having a message slot and a plurality of message switches to form a message circuit, each switch of the message circuit having a biased arm that extends into the message slot to maintain the switch in an actuated state, means being provided to produce an incremental movement of said arm against the bias of the bias arm which movement is effective to de-activate the switch,
(c) means for selectively actuating said message switches comprising a message card of a thickness that provides said incremental movement of the switches upon insertion of the card into the slot, said card being provided with holes arranged in a message pattern for registering with selected ones of said biased switch arms to enable the switches associated with said selected switch arms to remain actuated and for transmitting an electrical pulse pattern to the display unit that corresponds to the message pattern on said card, and
(d) a source of electrical power connected to said display and control units.

4,361,829
DEVICE FOR THE TURN INDICATOR BLINKER LIGHTS OF A MOTOR VEHICLE, ESPECIALLY OF A MOTORCYCLE

Richard Kramhöller, Munich; Hartwig Lobe, and Wolfgang Meyer, both of Unterschleissheim, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke AG, Munich, Fed. Rep. of Germany

Filed Apr. 11, 1979, Ser. No. 29,011
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1978, 2815784
Int. Cl.³ B62J *3/00*; B60Q *1/34*
U.S. Cl. 340—134 **10 Claims**



1. A device for indicating operation of the turn indicator blinker lights of a motorcycle having a handlebar comprising at least one gripping means adapted to be gripped by an operator of the motorcycle, the at least one gripping means being a grip for the handlebar mounted on the handlebar so as to at least partially surround an outer surface of an end portion of the handlebar and extend in the longitudinal direction of the handlebar, kinetic signal generating means responsive to the operation of the turn indicator blinker lights for generating a kinetic signal in the at least one gripping means, and means for coupling the handlebar grip to the kinetic signal generating means so as to move the handlebar grip with respect to the handlebar in the longitudinal direction of the handlebar in response to the signal generated by the kinetic signal generating means.

4,361,830
DEVICE FOR DISPLAYING FEATURE OF CONTOUR IMAGE

Kazuhiro Honma, Tokyo; Kajuro Shimizu, Miyoshi; Tetsu Nakatani, Higashimurayama, and Eiichi Takenaka, Tokyo, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Sep. 10, 1980, Ser. No. 185,775
Claims priority, application Japan, Sep. 10, 1979, 54-115921
Int. Cl.³ G06K *9/48*
U.S. Cl. 340—146.3 AC **4 Claims**

1. A device for the extraction of features of a contour image, which comprises:
(a) means for converting a multiplicity of points set at a fixed, very small interval on the contour line consecutively into coordinates in an x-y coordinate system,
(b) a first adder for adding the x coordinates of a selected

number of points on either side of the first point of said multiplicity of points,

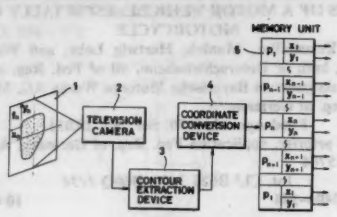
(c) a second adder for adding the y coordinates of said selected number of points on either side of said first point,

(d) a first divider for dividing each of the two outputs of said first adder by said selected number,

(e) a second divider for dividing each of the two outputs of said second adder by said selected number,

(f) a first subtractor for subtracting the x coordinates of said first point from the first output of said first divider and subtracting said first output from the second output of said first divider,

(g) a second subtractor for subtracting the first output of said second divider from the second output of said second divider and subtracting said first output of the second divider from the y coordinate of said first point,



(h) a third divider for dividing the first output of said second subtractor by the second output of said first subtractor,

(i) a first multiplier for multiplying the first output of said first subtractor by the output of said third divider,

(j) a third adder for adding the output of said first multiplier and the second output of said second subtractor,

(k) a first arithmetic means for squaring the output of said third divider,

(l) a fourth adder for adding the value "1" to the output of said first arithmetic means,

(m) a second arithmetic means for deriving the square root of the output of said fourth adder,

(n) a fourth divider for dividing the output of said third adder by the output of said second arithmetic means, and

(o) display means for displaying the output of said fourth divider.

4,361,831

ANALOG-DIGITAL CONVERTER UTILIZING MULTIPLE RAMP INTEGRATING TECHNIQUES

Hartmut Grützediek, Dresdner Ring 1, 6203 Hochheim, and Joachim Scheerer, Am Fort Weisenau 38, 6500 Mainz, both of Fed. Rep. of Germany

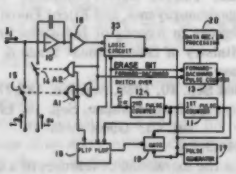
Filed May 10, 1979, Ser. No. 37,505

Claims priority, application Fed. Rep. of Germany, May 11, 1978, 2820601

The portion of the term of this patent subsequent to Oct. 9, 1990, has been disclaimed.

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 NT **10 Claims**



1. Analog-digital converter comprising an integrator (10) having an analog input signal (I_1, U_1) continuously applied to the input thereof and continuously integrating the signal;

means applying an auxiliary signal (I_2,I_3,I_c) to the integrator to cause the integrator to simultaneously integrate both the analog input signal and the auxiliary signal;

a threshold switch (16) connected to the output of the integrator and changing state after the integrated output has reached a predetermined value;

a pulse generator (17) providing output pulses;

a first pulse counter (11), a bistable element (18), and a second pulse counter (12);

the first and second pulse counters (11, 12) being connected in series and to the pulse generator to permanently count pulses of the pulse generator and the first pulse counter (11) being connected to set, at each overflow, the bistable element (18) into one of its stable states;

and a logic network (23) connected to the threshold switch (16), the pulse generator (17), the second counter (12) and connected to and controlling the bistable element (18) to reset it to its other stable state by the output from the logic network (23), the logic network (23) providing an output when and only when the first pulse is produced by the pulse generator (17) after a change of state of the threshold switch (16) has occurred,

the bistable element (18), when set upon overflow of the first counter (11), connecting said means applying the auxiliary signal to the integrator to provide an integrated representation of said auxiliary signal to the threshold switch (16) during the time interval said bistable element is in its set state;

a third pulse counter (13,22,26) connected to said pulse generator and counting pulses from said pulse generator and having control connections with said logic network; and

a pulse count recording means (20) connected to said third pulse counter (13,22,26) and incorporating calculating means for determining from the fluctuation of the least significant digit of said output value produced by said third counter (26) in a succession of said output values, a further decimal place for refinement of the digital value recorded;

the logic network providing a further output controlling transfer of the count from said third pulse counter (13,22,26) to said pulse count recording means (20) and resetting said third pulse counter (13,22,26) during the time interval corresponding to two successive overflow pulses of the second counter (12) and during simultaneous integration of the analog input signal and said auxiliary signal.

4,361,832

AUTOMATIC CENTRALIZED MONITORING SYSTEM

Martin T. Cole, 3 David St., East Bentleigh, Victoria, Australia

Filed Jan. 12, 1978, Ser. No. 869,009

Claims priority, application Australia, Jan. 28, 1977, PC8888

Int. Cl.³ G08B *29/00*; H04M *11/04*

U.S. Cl. 340—505 **11 Claims**

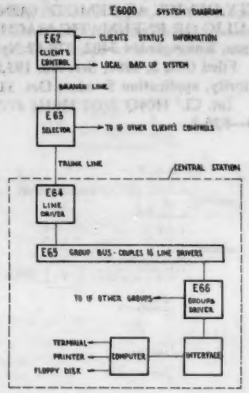
1. An automatic centralized monitoring system capable of monitoring various functions in a plurality of premises: comprising, a central station, said premises being adapted to be linked to said central station, monitoring means comprising one or more sensors adapted to be located in each of said premises, a plurality of m line driver means located at said central station linked to said premises, said premises being arranged in m unique groups with each group having a capacity of n premises, (m and n each being integers greater than one), each of the m line driver means being connected to a respective one of the unique groups, said line driver means being controlled by a computer means which is arranged to cause all the line driver means to:

(a) simultaneously select a predetermined first one of each of the n premises of its respective group of premises;

(b) read the sensor, or sensors, at each of the predetermined premises simultaneously, multiplex the readings, and transmit the multiplexed readings from all of the line

driver means to the computer which can then rapidly interpret the received readings;

(c) simultaneously select a predetermined second one of the n premises of its respective group of premises, and repeat the process of "b;"



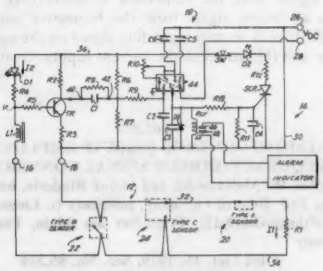
(d) continue to select an additional predetermined premise in each group in the manner described in a and b until all n premises have been interrogated, whereby the total time of scanning and interpreting is made short by using the speed of the computer for demultiplexing and interpreting.

4,361,833

MULTI-SENSOR ALARM SYSTEM AND METHOD OF PROTECTING A PREMISES

Richard P. Allgood, Bushnell, Fla., assignor to Monitran International, Inc., Nassau, The Bahamas

Filed Mar. 25, 1980, Ser. No. 133,807
Int. Cl.³ G08B *29/00*
U.S. Cl. 340—533 **29 Claims**



1. A multi-sensor alarm system, comprising:

(a) electrical circuit means for establishing a two-wire closed loop circuit path having a load impedance through which an electrical current is conducted;

(b) first sensor means electrically connected in the two-wire closed loop circuit path for detecting an alarm event, said first sensor means being actuatable in response to detection of the alarm event from a non-alarm state in which the electrical current is conducted through the first sensor means, to an alarm state in which the electrical current is prevented from being conducted through the first sensor means;

(c) second sensor means electrically connected in the same two-wire closed loop circuit path for detecting the alarm event, said second sensor means being actuatable in response to detection of the alarm event from a non-alarm state in which the electrical current is prevented from being conducted through the second sensor means, to an alarm state in which the electrical current is conducted through the second sensor means;

(d) each of said sensor means being respectively operative to differently change the electrical characteristics of the two-wire closed loop circuit path in response to actuation of each sensor means between its respective states;

(e) alarm means electrically connected to the same two-wire closed loop circuit path, for sensing either differently changed electrical characteristic of the circuit path, and for generating an alarm signal when either of the sensor means is in its respective alarm state, said alarm means including a switching element actuatable among a fully-on switched condition, a fully-off switched condition, and an equilibrium condition intermediate the fully-on and fully-off switched conditions, and means for establishing the equilibrium condition when both sensor means are in their non-alarm states, and wherein each of said sensor means is operative to actuate the switching element away from its equilibrium condition when either sensor means is in its respective alarm state; and

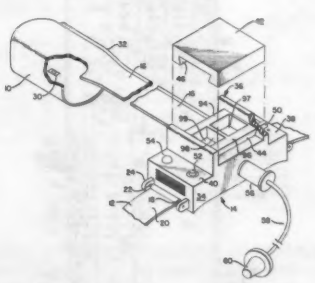
(f) supervisory means for constantly monitoring the status of the switching element and the sensor means, said supervisory means being operative to separately indicate when both sensor means are in their non-alarm states and said switching element is in its equilibrium condition, and to separately indicate when said first sensor means is in its respective alarm state and said switching element is in one of said switched conditions, and to separately indicate when said second sensor means is in its respective alarm state and said switching element is in the other of said switched conditions.

4,361,834

SAFETY ALARM DEVICE

Johnnie L. King, Rte. 1, Box 320, Wagarville, Ala. 36585

Filed Dec. 13, 1978, Ser. No. 968,987
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—575 **6 Claims**



1. A self-contained, portable safety alarm device for use by vehicle drivers and adapted to be worn on the hand of a user grasping the controls of the vehicle, for providing an alarm signal when, through drowsiness or otherwise, the user's grasp relaxes and the user's fingers move away from the contact surface of said vehicle controls, comprising:

at least partial glove means including fingertip means adapted to be worn on at least one fingertip of the user;

wrist band means adapted to be worn about the user's wrist;

connecting means connecting said fingertip means and said wrist band means;

a two part housing adapted for attached to said wrist band means including;

an upper compartment for housing a battery; and,

a lower compartment integrally connected to said upper compartment for housing an alarm circuit;

circuit elements supported by said housing and electrically connected together to provide the desired alarm signal including;

circuit elements supported by said housing and electrically connected together to provide the desired alarm signal including;

said battery enclosed in said upper compartment;

an on-off switch mounted on said housing and electrically connected in series with said battery for switching said safety alarm device on during use and off during storage;

alarm means enclosed within said lower compartment and electrically connected to be energized by said battery;

circuit interuption means including a spring-loaded, normally-closed contact switch connected in series with said battery and alarm means, whereby said contact switch opens when the user engages the contact switch against a contact surface of said vehicle controls and said contact closes to connect said battery to said alarm means when the user's fingers relax away from said contact surface;

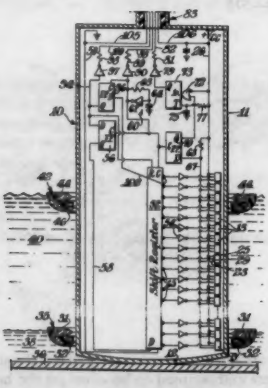
a battery test circuit enclosed in said lower compartment and connected in parallel with said battery, alarm means, and circuit interuption means for testing the charge condition of the battery, said test circuit including a test switch mounted on said housing and connected in series with a test light mounted on said housing, whereby when said test switch is activated said test light will illuminate if the charge condition of battery is satisfactory.

4,361,835

HALL-CELL LIQUID LEVEL DETECTOR

Bela G. Nagy, Acton, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Mar. 16, 1981, Ser. No. 244,357
Int. Cl.³ G01F *23/12*
U.S. Cl. 340—624 **7 Claims**



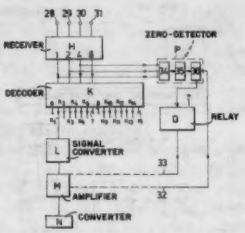
1. A liquid level detector comprising: a column of Hall-cells adapted to be mounted vertically in a tank containing a liquid; a magnet being adapted to move vertically at a substantially fixed spacing from said column of Hall-cells; a float means for maintaining said magnet at the surface of said liquid to increase the magnetic field at the Hall-cell adjacent to said magnet, and an electronic means for sequentially applying DC power to each of said Hall-cells in said column, and for sensing, shaping and summing the outputs of all said Hall-cells, whereby the time period, between said applying DC power to a particular predetermined one of said Hall-cells and the occurrence in said summed outputs of a Hall-cell output signal that is characteristic of a Hall-cell in the field of said adjacent magnet, provides a unique indication of said liquid level.

4,361,836

SAFETY DEVICE AT REMOTE CONTROL OF HYDRAULIC OR PNEUMATIC MACHINE TOOLS

Ted Zettergren, Kungsgärden 3402, 870 52 Nyland, Sweden

Filed Oct. 3, 1980, Ser. No. 193,536
Claims priority, application Sweden, Oct. 11, 1979, 7908451
Int. Cl.³ H04Q *9/00*; H01H *47/32*
U.S. Cl. 340—825.2 **8 Claims**



1. A safety device at the remote control of hydraulic or pneumatic machine tools where electric signals are used for controlling hydraulic or pneumatic valves, typically in machines comprising a selector valve for different hydraulic functions, which is provided with a plurality of spring-centered slides and two electrohydraulic or electropneumatic converters (N) connected to each slide, where a control unit is provided to transfer orders to a receiver unit (H), which in its turn controls said converters, and the output of said receiver unit is connected to signal converters (L) and amplifiers (M) for amplifying received signals and controlling said converters (N), wherein the output of the receiver unit also is connected to a zero-detector (P), which is capable, after a certain predetermined time from detection that there is no output signal from the receiver unit (H), to detect whether or not there is an output signal from the respective amplifier (M), and when there is an output signal from the respective amplifier (M) although there is no corresponding signal on the output of the receiver unit (H), to break the current supply to said amplifier (M).

4,361,837

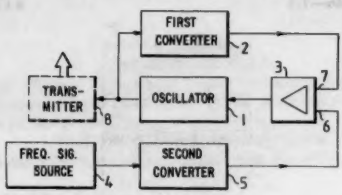
REMOTE CONTROL CIRCUIT EMPLOYING FREQUENCY/DIRECT SIGNAL CONVERTERS

Christopher W. Malinowski, and Heinz Rinderle, both of Heilbronn, Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 16, 1979, Ser. No. 85,334
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1978, 2844936; Oct. 16, 1978, 2845005
Int. Cl.³ G08C *19/00*
U.S. Cl. 340—825.72 **31 Claims**

1. A remote control circuit including a transmitting portion comprising: a first controllable oscillator having a control input, a first frequency/direct signal converter and a first comparator which are connected together into a frequency control loop, with said first converter being connected to receive an input signal having a frequency proportional to that produced by said oscillator, one input of said first comparator being connected to receive a signal proportional to that produced by said first converter, and said oscillator control input being connected to receive a signal proportional to that at the output of said first comparator; a transmitter connected to

receive the output signal from said oscillator of the control loop; and means defining a control path including a frequency signal source and a second frequency/direct signal converter which receives its input signal from the frequency signal source, with said second converter having its output connected with the other input of said first comparator of the control circuit, and a receiving portion comprising: a second controllable oscillator having a control input, a third frequency/direct signal converter and a second comparator connected together into a frequency control loop, with said third converter being



connected to receive an input signal having a frequency proportional to that produced by said second oscillator, one input of said second comparator being connected to receive a signal proportional to that produced by said third converter, and said second oscillator control input being connected to receive a signal proportional to that at the output of said second comparator; and means defining a second control path for controlling said receiving portion control loop and including an amplifier and a fourth frequency/direct signal converter connected in series with said amplifier and having an output connected with the other input of said second comparator.

4,361,838

REMOTE METER READING ARRANGEMENT

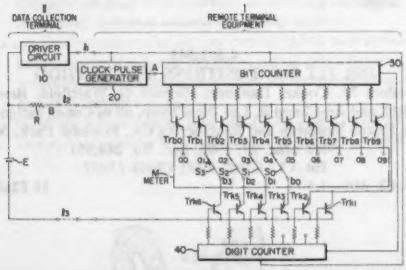
Toshiaki Mizuta, Kawasaki, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Jul. 25, 1979, Ser. No. 60,461

Claims priority, application Japan, Jul. 29, 1978, 53-93004; Aug. 26, 1978, 53-103379; Sep. 25, 1978, 53-116492

Int. Cl.³ G08C *19/00, 19/16*

U.S. Cl. 340—870.02 **5 Claims**



1. A remote meter reading arrangement, comprising:

(a) a plurality of remote terminals each comprising:

a clock pulse generator for providing a periodic train of clock pulses;

a bit counter for sequentially and repetitively enabling a series of output lines in response to successive ones of said clock pulses;

a digit counter for sequentially enabling a group of output lines, said digit counter being incremented by one each time said bit counter completes a cycle enabling said series of output lines thereof;

a remote meter having a plurality of digit value contacts coupled to respective output lines of said bit counter, and a number of digit position contacts coupled to corresponding output lines of said digit counter, each digit position contact being connected by said meter to a digit value contact indicative of the value of the digit to be read at the corresponding digit position,

whereby upon application of power to said remote terminal, each of said corresponding output lines of said digit counter is enabled for a time interval corresponding to the duration of said bit counter cycle, current flowing through said meter at a time from the beginning of each said time interval which is indicative of the value of the digit to be read at the corresponding digit position;

(b) a data collection terminal comprising:

driver circuit means for selectively supplying power to each of said remote terminals at a given time;

data signal generating means for providing a signal corresponding to the current flowing through said meter; and

a sampling pulse generator coupled to said data signal generating means for providing sampling pulses having the same period as and in synchronism with said remote terminal clock pulses;

a data collection circuit coupled to said sampling pulse generator and said data signal generating means for providing an output signal indicative of the reading of said meter; and

(c) transmission line means for connecting each of said remote terminals to said data collection terminal for providing power to said remote terminals and for coupling variations in current flow through said meter to said data signal generating means.

4,361,839

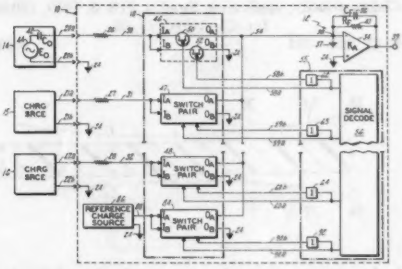
CHARGE SOURCE MULTIPLEXING

William E. Betterini, Rocky Hill, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Apr. 3, 1980, Ser. No. 137,141

Int. Cl.³ G08C *15/06*

U.S. Cl. 340—870.13 **3 Claims**



1. A charge source signal conditioner for providing an analog signal manifestation of the charge signals from a plurality of charge sources, comprising:

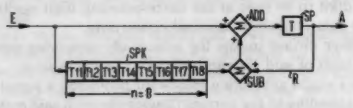
charge amplifier means, for converting the charge magnitude of each charge signal presented at an input thereof into a selectable, equivalent magnitude analog signal provided at an output thereof; and

charge-mode signal multiplexer means, for providing a low impedance series signal path for the charge signals from each source to said input of said charge amplifier means, one at a time, in a related charge source sample time interval from a repetitive sequence of alternating sample time intervals and non-sample time intervals for all of the charge sources, said multiplexer means providing a low impedance shunt signal path to the output signals of each charge source at all other times.

4,361,840
CIRCUIT ARRANGEMENT FOR A RADAR FOR AUTOMATIC RECOGNITION OF MOVING TARGETS

Rudolf Hauptmann, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 4, 1980, Ser. No. 137,279
Claims priority, application Fed. Rep. of Germany, May 30, 1979, 2921979
Int. Cl.³ G01S *13/52, 13/70*
U.S. Cl. 343—7.7 **12 Claims**

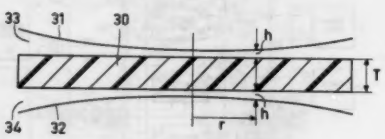


1. A moving window detector for radar comprising, an input terminal to which echo scan signals are supplied, an adder means connected to said input terminal, an individual storage means connected to said adder means, a shift register having a number of storage cells with its input connected to said input terminal, a subtractor which receives the outputs of said shift register and said individual storage means, and supplies an output to said adder means, and an output terminal connected to the output of said individual storage means.

4,361,841
LENS ANTENNA

Knut E. Cassel, and Bengt T. Molin, both of Jarfalla, Sweden, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 28, 1980, Ser. No. 144,727
Claims priority, application Sweden, Feb. 6, 1979, 7901047
Int. Cl.³ H01Q *15/08*
U.S. Cl. 343—754 **7 Claims**

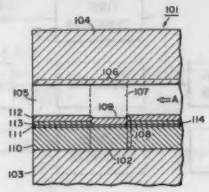


1. An antenna comprising two conductive plates, feeders distributed around the periphery of the plates, and a lens including a disc-shaped lens element positioned between the plates, said feeders being oriented to transmit and receive waves polarized in a direction forming an angle of less than 90° with a major surface of the lens element, and said lens element having a radially-varying diffraction index in accordance with the Luneberg principle, wherein a portion of the distance between the two conductive plates is filled with a dielectric medium having a dielectric constant corresponding to that of air, and where the height of said dielectric medium varies relative to the height of the lens element, such that maximal equality is obtained between effective dielectric constants for a wave's E-field component which is parallel to the lens element major surface and the wave's E-field component which is perpendicular to the lens element major surface, at each point in the lens.

4,361,842
RECORDING METHOD USING FILM FORMING LIQUID COMPOSITION

Masahiro Haruta, Funabashi; Yohji Matsufuji, Tokyo; Yasuhiro Yano, Tokyo; Tokuya Ohta, Yokohama, and Tsuyoshi Eida, Chiba, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1980, Ser. No. 184,750
Claims priority, application Japan, Sep. 14, 1979, 54-118242; Nov. 14, 1979, 54-147525; Nov. 16, 1979, 54-148664
Int. Cl.³ B05D *1/02;* G01D *15/18*
U.S. Cl. 346—1.1 **4 Claims**



1. In a recording method wherein liquid droplets containing a recording agent are caused to adhere onto the surface of a recording medium by using a recording head provided with a discharge orifice to eject the liquid therefrom and to form flying droplets, a heat energy acting zone filled with a body of said liquid which is communicatively connected with the discharge orifice and a liquid feeding port and where heat energy to form the flying droplets is imparted repeatedly to the body of liquid filled in said zone, and a heat energy generating element to generate the heat energy, the improvement comprising the steps of:

(a) filling said heat energy acting zone with a liquid containing a liquid medium, a recording agent to form an image on a recording medium, and a coating-film forming compound which undergoes a thermal oxidation reaction when subjected to the action of said heat energy and which, in response to said action, is capable of and is used in an amount sufficient to thereby form a coating film; and

(b) causing said heat energy to repeatedly act on said liquid to subject the coating-film forming compound to the thermal oxidation reaction so as to repeatedly form the coating film on the wall surface of said heat energy acting zone.

4,361,843
INK JET COMPOSITIONS AND METHOD

Theodore M. Cooke, Danbury; Richard G. Whitfield, Brookfield, and An-Chung R. Lin, New Town, all of Conn., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Mar. 27, 1981, Ser. No. 248,551
Int. Cl.³ G08C *9/00;* C09D *11/02*
U.S. Cl. 346—1.1 **18 Claims**

1. A fluid composition which has a surface tension greater than approximately 35 dynes/cm. and which can provide good print quality defined by an average dot circularity of approximately better than 0.7 for a wide range of printing papers such

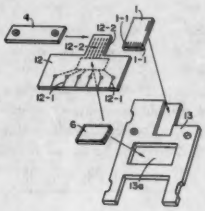
that it is suitable for use as an ink in ink jet systems, comprising a substantially non-aqueous printing medium including a mixture of oleic acid in an approximate weight of from 20 to 80 percent of the total mixture composition and a dye in a dye solvent, said solvent selected from a group consisting of at least one of: an aromatic alcohol, an aromatic ether, dimethyl sulfoxide, an alkyl pyrrolidone, methoxy- and ethoxy- triglycol.

4,361,844

RECORDING HEAD

Mineo Nozaki, Kawasaki; Osamu Asakura, Tokyo, and Masasumi Nagashima, Yokosuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 15, 1981, Ser. No. 273,438
Claims priority, application Japan, Jun. 26, 1980, 55-87083
Int. Cl.³ H05B *1/00*
U.S. Cl. 346—76 PH **10 Claims**



1. A detachable recording head, comprising:
recording means having plural recording elements;
serial-parallel converting means provided with a parallel output unit for parallel supply of drive signals to said plural recording elements of said recording means and adapted to supply serially entered drive signals to said parallel output unit after conversion of said signals into parallel signals;
means for supplying drive signals given to the parallel output unit of said serial-parallel converting means to said recording elements of said recording means;
a terminal member electrically connected to said serial-parallel converting means for serial signal entry thereto, said terminal member being provided for connection with an external connector; and
a substrate for mounting said recording head, serial-parallel converting means, supply means and terminal member.

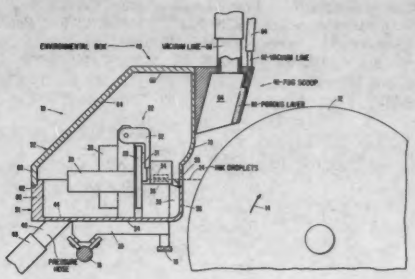
4,361,845

DEVICE FOR PREVENTING THE CONTAMINATION OF INK JET COMPONENTS

Gordon J. Smith, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 16, 1981, Ser. No. 244,381
Int. Cl.³ G01D *11/24, 15/18*
U.S. Cl. 346—140 R **16 Claims**

7. In a nonimpact printing system wherein an indicia recording sheet is mounted to the surface of a rotating drum, a drop generator disposed relative to the drum and operable to produce a plurality of ink droplets, and means for influencing the droplets to enable printing on the recording sheet, an improved apparatus for controlling contaminants comprising:
an ink mist collecting scoop having an inlet opening therein, said scoop disposed relative to the drop generator with the inlet opening positioned upstream from a zone whereat



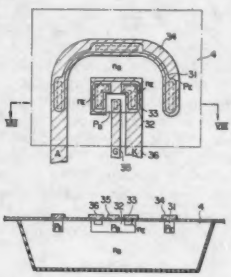
the ink droplets contact the recording sheet in the direction of drum rotation.

4,361,846

LATERAL TYPE SEMICONDUCTOR DEVICES WITH ENLARGED, LARGE RADII COLLECTOR CONTACT REGIONS FOR HIGH REVERSE VOLTAGE

Kiyoshi Tsukuda, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 964,820, Nov. 30, 1978, abandoned.
This application Aug. 7, 1980, Ser. No. 176,207
Claims priority, application Japan, Dec. 5, 1977, 52-144982
Int. Cl.³ H01L *29/06*
U.S. Cl. 357—30 **12 Claims**



1. A lateral type semiconductor device, comprising:
a semiconductor substrate,
a reverse bias voltage means,
a first diffusion region, having a conductivity type opposite to that of said substrate to provide a PN junction which withstands said reverse bias voltage applied therebetween, said first diffusion region forming a strip having two end portions and at least one electrode mounting portion formed to have a radius of curvature of at least 1.5 times the depth of said first diffusion region at the outward corners thereof and at least one elongated narrow portion having a width which is narrower than a width of said electrode mounting portion, and
a second diffusion region, having the same conductivity type as said first diffusion region, formed by impurity diffusion laterally with said first diffusion region.

4,361,847

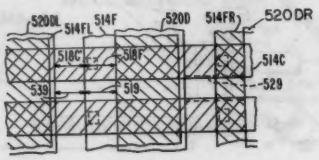
NON-VOLATILE EPROM WITH ENHANCED DRAIN OVERLAP FOR INCREASED EFFICIENCY

Eliyahou Harari, 2320 Friars La., Los Altos, Calif. 94022

Continuation-in-part of Ser. No. 137,764, Apr. 7, 1980, Pat. No. 4,328,565. This application May 27, 1980, Ser. No. 153,251

Int. Cl.³ H01L *29/78, 27/02, 27/10;* **G11C** *11/40*

U.S. Cl. 357—23 **12 Claims**



1. A semiconductor memory structure formed in semiconductor material of a first conductivity type with memory cells and access circuitry formed in a portion of the top surface of said semiconductor material and with those portions of this top surface in which memory cells and access circuitry are not formed comprising the field of the structure comprising:

a plurality of source-drain regions of a second conductivity type opposite said first conductivity type formed in said semiconductor material, wherein a source region and a drain region with a channel region therebetween comprises a memory cell and wherein each memory cell further comprises

a floating gate positioned above and insulated by gate insulation from a portion of the channel region and also positioned such that a substantial portion of said floating gate is above and insulated from a portion of the drain region; and

a control gate insulated from but extending over both the floating gate and the portion of the channel region not covered by the floating gate;

an impurity of said first conductivity type, said impurity having a higher doping concentration than the doping concentration of said semiconductor material, said impurity being formed in those portions of the field of the device bounded by adjacent control gates and lines coincident with edges of said floating gates and crossing said control gates at substantially right angles, thereby to substantially reduce the junction capacitance of each source-drain region with the channel region and the field of the structure compared to this junction capacitance when said impurity is formed throughout the field of the structure, while at the same time maintaining adequate protection against leakage paths.

4,361,848

SYSTEM FOR DIGITALLY TRANSMITTING AND DISPLAYING DATA ON TELEVISION RECEIVER SCREEN

Alain Poignet; Claude Fournier, and Martine Le Marouille, all of Rennes, France, assignors to L'Etat Francais, Montrouge, France

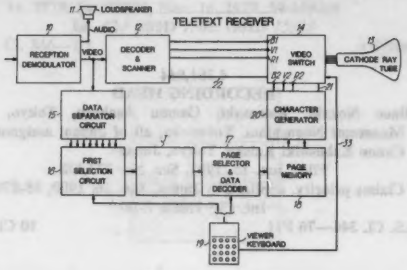
Continuation of Ser. No. 830,165, Sep. 2, 1977, abandoned. This application May 17, 1979, Ser. No. 39,837

Claims priority, application France, Sep. 6, 1976, 76 27212

Int. Cl.³ H04N *1/32;* **G06F** *3/14*

U.S. Cl. 358—1 **3 Claims**

1. A teletext system for digitally transmitting and displaying text material from any of many different services on a television screen, the digital transmission being in the form of data packs randomly intermixed from several channels, whereby successive data packs may relate to any of said completely different services, each of said packs having signals constituting a magazine of several pages, wherein the data belonging to each page are grouped in rows (or page lines), the data belonging to each row being preceded by a row flag followed by a row number, and ending with the next row flag, the row number detected after each row flag determining the address at which the row data must be stored in the said memory means, and wherein the data for each page of information begins with a page flag, said system comprising keyboard means for identifying a desired page, whereby signals from said keyboard



select between said different services, comparator circuit means responsive to page flags for detecting said desired page responsive to operation of said keyboard means, memory means responsive to said comparator means for storing data relative to said desired page, and character generator means for displaying said desired page on a television screen responsive to the data stored in said memory means.

4,361,849

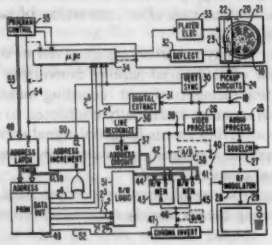
VIDEO DISC VARI-SPEED PLAYBACK SYSTEM

Thomas V. Bolger, Merchantville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 6, 1980, Ser. No. 204,761

Int. Cl.³ H04N *5/76*

U.S. Cl. 358—312 **13 Claims**



1. A video disc playback apparatus capable of slow and fast motion display of TV signal recovered from a disc record having substantially parallel information track segments thereon wherein more than one frame of TV signal is stored per 360 degrees of track length and having a signal pickup transducer tracing said track and cooperating with processing circuitry for recovering said signal from said disc and further comprising:

storage means having a capacity to store substantially two fields of TV signal, said storage means having an input terminal connected for receiving said recovered signal and an output terminal connected to a first node;

read/write circuitry responsive to first control signals at control terminals thereof for conditioning said storage means to store or to output selected fields of the recovered signal;

a steering transducer responsive to second control signals

applied to control terminals thereof for selectively translating the signal pickup transducer from a track currently being traced to another preselected track;

control means responsive to vertical synchronizing components of the recovered signal and to user controlled selection switches for generating at output terminals thereof, prescribed sequences of command signals at said output terminals, occurring at the vertical field rate for controlling the position of said pickup transducer and the field of TV signal currently available at said first node each time said pickup transducer encounters the beginning of a further TV signal field on said disc record; and

respective means connecting specific ones of said control means output terminals to respective ones of said steering means control terminals and said read/write circuitry control terminals.

4,361,850

COLOR TELEVISION RECEIVER WITH CHARACTER DISPLAY FUNCTION

Yoshinori Nishimura, Daito, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

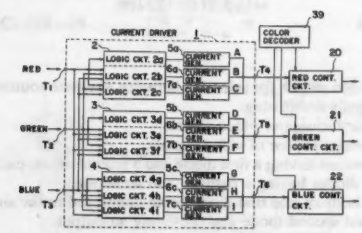
PCT No. PCT/JP79/00184, § 371 Date Mar. 13, 1980, § 102(e) Date Dec. 11, 1979, PCT Pub. No. WO80/00292, PCT Pub. Date Feb. 21, 1980

PCT Filed Jul. 12, 1979, Ser. No. 193,942

Claims priority, application Japan, Jul. 13, 1978, 53-86494

Int. Cl.³ H04N *9/535, 9/20*

U.S. Cl. 358—65 **6 Claims**



1. A color television receiver having red, green and blue control circuits for applying red, green and blue currents to respective color guns of a cathode-ray tube in accordance with a received signal to render the respective brightness of the colors established on a screen of the cathode-ray tube to be equal to each other, said color television receiver including a decoder for producing red, green and blue color signals in the form of bilevel signals in accordance with the received signal, and a current driver means having at least three inputs for receiving the bilevel signals, said current driver means comprising a logic circuit means coupled to said inputs for receiving said bilevel signals from said decoder and for providing bilevel color driving signals in accordance with the received bilevel signals and current generator means coupled to said logic circuit means for receiving the output thereof and for generating a color driving current for each color gun in accordance therewith wherein each driving current is formed of a selected one of or combination of plural current components having different current levels.

4,361,851

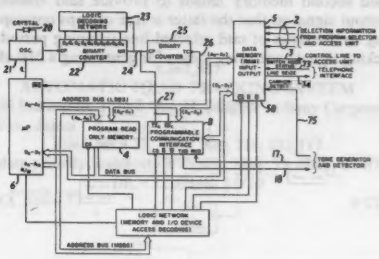
SYSTEM FOR REMOTE MONITORING AND DATA TRANSMISSION OVER NON-DEDICATED TELEPHONE LINES

William F. Asip, 340 E. 52nd St., New York, N.Y. 10022, and Miklos L. Bartha, 11 Meade Ave., Passaic, N.J. 07055

Filed Jan. 4, 1980, Ser. No. 109,624

Int. Cl.³ H04N *7/10*

U.S. Cl. 358—84 **6 Claims**



1. A television use monitoring device for direct electrical connection to a telephone line, comprising:

(a) coupling means coupled to said television for detecting when said television is actively receiving a predetermined channel and producing, in response thereto a program selection signal indicating the active reception of a particular program selection;

(b) timer means for providing timing information;

(c) transient memory means responsive to said coupling means to store, in response to a first control signal, said program selection signal associated with a particular program whose active reception has been detected;

(d) second memory means responsive to said transient memory means to receive the output of said transient memory means in response to a second control signal and produce the same at its output in response to a third control signal;

(e) control means responsive to said timer for periodically causing said transient memory means to store any program selection signal present in the system, and reading the contents of said transient memory means, and responsive to said transient memory means to cause said transient memory means to transfer its contents to said second memory means in response to the detection of said program selection at one point in time and a second detection of the same program selection a predetermined period of time thereafter;

(f) interface means, responsive to said control means and said second memory means to encode said program selection signal for transmission; and

(g) transmission coupling means, responsive to said interface means, to couple the output of said interface means to conventional telephone lines and transmit said program selection to a central billing facility.

4,361,852

SIGNAL PROCESSING CIRCUIT FOR VIDEO SIGNAL WITH BURIED AUDIO SIGNAL

Lance J. Katzfey, San Diego, Calif., assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 29, 1980, Ser. No. 191,764

Int. Cl.³ H04N *7/08*

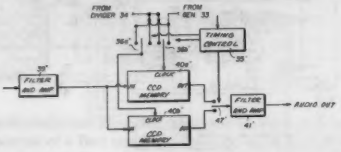
U.S. Cl. 358—145 **16 Claims**

1. A circuit for processing a composite video signal formed of a video signal having a series of field periods each constituted by a sequence of line-scanning periods and of a buried audio signal occurring in at least one selected line-scanning period of at least certain field periods; comprising:

audio channel means for receiving and processing said buried audio signal to yield a substantially continuous audio

signal, including first memory means into which said buried audio signal is written and from which said substantially continuous audio signal is thereafter read out at a speed depending on the frequency of a clocking signal applied thereto, second memory means into which said buried audio signal is written and from which said substantially continuous audio signal is read out at a speed depending on the frequency of a clocking signal applied thereto, and selecting means for selecting said first and said second memory means to provide said continuous output signal so that the latter is free of gaps corresponding to the times of said selected line-scanning periods;

clocking signal generating means for generating a first clocking signal at a first clocking frequency and a second clocking signal at a second, higher clocking frequency; and



clock control means for selectively applying said second clocking signal to said first and second memory means during said at least one selected line-scanning period and for selectively applying said first clocking signal to said first and second memory means during the remainder of said line-scanning periods, so that said buried audio signal is written into said first and second memory means at said second clocking frequency during said at least one selected line-scanning period and the written-in buried audio signal is read out of said memory means during substantially all of each field period to yield said substantially continuous audio signal.

4,361,853

SYSTEM FOR REDUCING THE VISIBILITY OF THE NOISE IN TELEVISION PICTURES

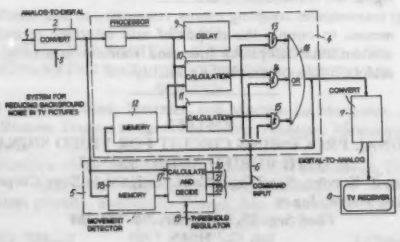
Maurice A. Remy, Paris, France; Jacques Poncin, 10, Boulevard Volney, and Pierre R. Rogel, 14, rue Frederic Sacher, both of 35000 Rennes, France, assignors to Telediffusion de France; Jacques Poncin and Pierre R. Rogel, all of, France

Continuation of Ser. No. 895,912, Apr. 13, 1978, abandoned. This application Dec. 31, 1979, Ser. No. 108,494

Claims priority, application France, Apr. 14, 1977, 77 11800

Int. Cl.³ H04N *5/21*

U.S. Cl. 358—167 **5 Claims**



1. A system for improving the signal-to-noise ratio in an incoming video signal, said system comprising first and second storage means for separately storing video signals for comparison with a later received incoming video signal, transmitting means for directly transmitting incoming video signals as they are received; first means jointly responsive to said video signals stored in said first storage means and to said later received incoming video signals for respectively developing output video signals, movement detector means including processing means responsive to said incoming video signal and to previous incoming video signals stored in said second storage means for developing multi-condition control signals and for utilizing internally developed difference signals for indicating the differences between a current incoming video signal point and its neighboring video signal points and the corresponding points of video signals stored in said second storage means, gating means responsive to said multi-condition control signals for selectively connecting either said incoming signal from said transmitting means or said output video signals from said first means to an output terminal and also to said first storage means, means included in said movement detector responsive to said difference signals relative to a predetermined threshold level for delivering binary signals to indicate whether said difference is above or below said threshold level, and logic circuit means also included in said movement detector means responsive to said binary signals and to at least one of said multi-condition control signals for providing said multi-condition control signals to said gating means.

4,361,854

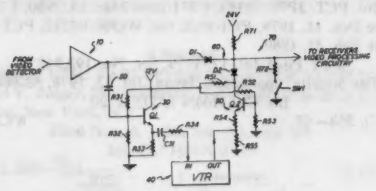
VIDEO SWITCH FOR A VTR-COMPATIBLE TELEVISION RECEIVER

Paul G. Wolfe, Batavia, N.Y., assignor to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Jun. 2, 1980, Ser. No. 155,701

Int. Cl.³ H04N *5/48*

U.S. Cl. 358—181 **3 Claims**



1. A video switch for selecting between alternate sources of video signals comprising:

a primary source of video signals;

an alternate source of video signals;

diode means having a first diode and a second diode, each of said diodes having a cathode and an anode;

the cathode of said first diode being connected to the anode of said second diode and providing an output;

one of said sources of video signals being coupled to the anode of said first diode;

the other of said video sources being coupled to the cathode of said second diode; and

bias control means connected to said diode means to selectively bias said diodes so that video signals from the selected source will appear at said output.

4,361,855

FAULT LOCATION METHOD IN MASS-STORAGE SYSTEM

Tsuyoshi Igarashi, Kawasaki, Japan, assignor to Fujigsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 967,633, Dec. 8, 1978, which is a continuation-in-part of Ser. No. 109,509, Jan. 4, 1980, which is a continuation-in-part of Ser. No. 967,633, Dec. 8, 1978. This application Oct. 3, 1980, Ser. No. 193,817

Claims priority, application Japan, Dec. 12, 1977, 52-148972

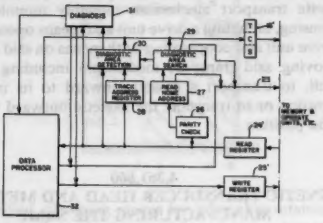
Int. Cl.³ G11B *5/09*

U.S. Cl. 360—39 **10 Claims**

1. A fault location method in a mass-storage system comprising (1) a recording medium having a plurality of tracks, each

track having a home address area, for storing home address data comprising the track address, and at least one diagnostic area, and wherein the addresses of all said diagnostic areas are recorded in a predetermined record area in one of said tracks, and (2) a recording main unit having a data read/write head corresponding to each track, said method comprising

storing the address of the track in use when a fault is detected by reading the content of said home address area of said track,



reading the addresses of said diagnostic areas from said predetermined record area of said track where said addresses are stored,

searching the track addresses of said diagnostic areas for selecting said diagnostic area in said track which was in use when said fault was detected, and

executing diagnostic operations in said selected diagnostic area.

4,361,856

VIDEO TAPE RECORDER

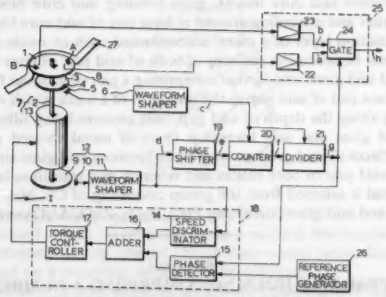
Hiroshi Okamoto, Yao, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 5, 1980, Ser. No. 213,730

Claims priority, application Japan, Dec. 11, 1979, 54-161127

Int. Cl.³ G11B *15/44*

U.S. Cl. 360—64 **3 Claims**



1. A video tape recorder comprising two video heads which are mechanically displaced by 180° for reproducing recorded video signals on a magnetic tape, comprising:

a first pulse generator means for providing a PG pulse for indicating the position of one of said video heads;

a second pulse generator means for providing 2 N pulses per revolution of said video heads, wherein N is an integer;

a driving means for driving said video heads;

a phase controller means for controlling the phase of said video heads in accordance with a reference phase signal;

a first divider means, reset by said PG pulse, for dividing an output frequency from said second pulse generator means by N and for generating output pulses having phases corresponding to the phases of said video heads;

a second divider means for dividing an output frequency of said first divider means by 2; and

a head switching means for choosing reproduced video signals by said video heads according to an output of said second divider means, and for sequentially outputting the chosen video signals.

4,361,857

AUTOMATIC HEAD TRACKING SYSTEM

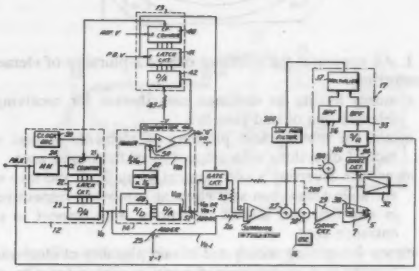
Hitoshi Sakamoto, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 21, 1980, Ser. No. 152,117

Claims priority, application Japan, May 31, 1979, 54-67791

Int. Cl.³ G11B *21/10*

U.S. Cl. 360—77 **9 Claims**



1. An apparatus for reproducing information signals recorded in successive parallel tracks on a record medium, comprising:

transducer means movable in a direction generally along the tracks for reproducing the signals recorded therein;

transducer deflecting means supporting said transducer means and being operative, in response to application of an electrical drive signal to said transducer deflecting means, for deflecting said transducer means in a direction transverse to said direction along the tracks;

head movement detecting means for providing a head movement signal indicating all movements of said transducer means in said transverse direction;

means for providing a dithering signal;

means for providing a head position and track selection control signal;

means for generating a track following error signal; and

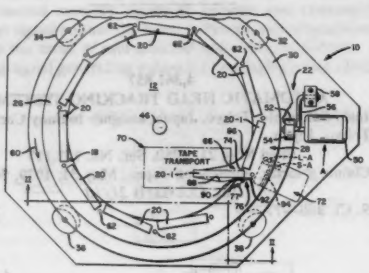
means for combining said dithering signal, said head position and track selection control signal and said track following error signal to provide therefrom said electrical drive signal which is applied to said transducer deflecting means;

said means for generating the track following error signal including means connected with said transducer means for detecting an envelope of the signals reproduced by said transducer means, means connected with said head movement detecting means and receiving at least said head position and track selection control signal for removing from said head movement signal any components of the latter due to at least said head position and track selection control signal, and means providing said track following error signal by synchronously demodulating the detected envelope of the reproduced signals with the head movement signal from which said components have been removed.

4,361,858
METHOD AND APPARATUS FOR SELECTING ELEMENTS

William I. Chambers, Wichita, Kans., assignor to NCR Corporation, Dayton, Ohio

Filed Aug. 22, 1980, Ser. No. 180,220
Int. Cl.³ G11B *15/68, 23/04*
U.S. Cl. 360—92 18 Claims



1. An apparatus for selecting one of a plurality of elements comprising:

a means having an entrance area therein for receiving a selected one of said elements;

means for moving said plurality of elements in first and second directions with respect to said entrance area;

means for diverting a said element away from and into said entrance area when said element is moving respectively, in said first and second directions, with respect to said entrance area;

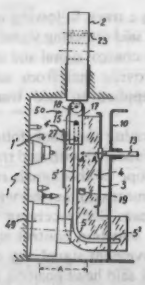
means for sensing which one of said plurality of elements is located at a predetermined position with respect to said entrance area, and

control means responsive to said sensing means for controlling said moving means to move said plurality of elements in said second direction when a selected element is located at said predetermined location to thereby move said selected element into said entrance area.

4,361,859
LOADING SYSTEM FOR VIDEO CASSETTES

Etienne A. M. Schatteman, Brussels, Belgium, assignor to Staar S.A., Brussels, Belgium

Filed Apr. 7, 1980, Ser. No. 138,089
Claims priority, application France, Apr. 13, 1979, 79 10275
Int. Cl.³ G11B *23/04, 19/18*
U.S. Cl. 360—96.5 15 Claims



1. In a machine for recording and playing back information on magnetic tape contained in a cassette, a cassette loading apparatus for automatically placing a cassette in operative position with means for driving the tape and components for recording and for playing back recordings on the tape, and for ejecting the cassette, said apparatus comprising:

a housing including means for guiding a cassette upon its inward movement edge forward in substantially a single plane from an insertion position to an intermediate position in said housing or its outward movement to said insertion position;

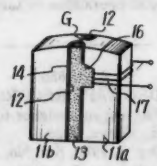
means on said machine supporting said housing for movement of a cassette transversely to said plane between its intermediate position and its operative position; and

cassette transport mechanism movably mounted on said housing, including a drive unit and means operated by said drive unit and cooperating with means on said housing for moving said transport mechanism including said drive unit, to transport a cassette inward to its intermediate position or to transport the cassette outward to its insertion position.

4,361,860
MAGNETIC TRANSDUCER HEAD AND METHOD OF MANUFACTURING THE SAME

Kazuo Nozawa, Tagajo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 25, 1980, Ser. No. 124,420
Claims priority, application Japan, Feb. 28, 1979, 54-22659
Int. Cl.³ G11B *5/251*
U.S. Cl. 360—120 2 Claims



1. A magnetic transducer head comprising a pair of core blocks made of magnetic alloy, an effective magnetic gap between said core blocks, glass bonding said core blocks together and a winding around at least one of said core blocks, a transition layer of a metal accompanied with an oxide of said metal between the surfaces of both of said pair of core blocks and said glass, and further comprising a pair of grooves formed at one end of said gap in the direction of a track width extending along the depth of said gap, said grooves being filled with said glass and said transition layer of metal formed on the surfaces of said grooves so as to be between said glass and both of said pair of core blocks and wherein said transition layer of metal is selected from the group consisting of Cu, Mo, T, and W and said glass containing PbO, B_2O_3, ZnO, Al_2O_3 and SiO_2.

4,361,861
APPARATUS HOUSING COMPRISING A NUMBER OF PARALLEL COMPONENT BOARDS

Harald H. C. M. Spapens, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 8, 1980, Ser. No. 184,842
Claims priority, application Netherlands, Sep. 14, 1979, 7906862
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—391 4 Claims

1. An apparatus of the type having a plurality of electrical component boards in a housing, comprising

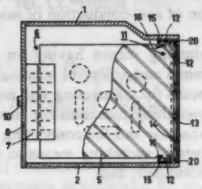
a plurality of component boards, each board having first and second edges, a third edge extending between said first and second edges, a fourth edge opposite said third edge, and an electrical connector disposed along said third edge,

a housing having first and second walls opposite each other, a third wall extending between said first and second walls,

and a respective plurality of electrial connectors arranged along said third wall,

each of said boards having the connector along its third edge detachably connected to a respective connector along the housing third wall, the first and second edges of said boards being free of guiding connection to said housing, and

a respective plurality of guide brackets, each bracket having a groove into which a fourth edge of a component board



is received, clamping means for releasably retaining each bracket on the respective board, and spacer cams extending from the bracket generally perpendicular to the component board, each cam having a free end, said cams being so arranged that free ends of cams from adjoining brackets abut each other so as to space the respective components boards in a predetermined relationship, space between cams extending in a same direction from a bracket allowing free flow of air between the adjoining brackets.

4,361,862

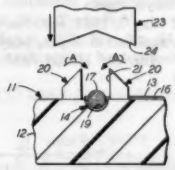
ASSEMBLIES OF ELECTRICAL COMPONENTS WITH PRINTED CIRCUIT BOARDS, AND PRINTED CIRCUIT BOARD STRUCTURES THEREFOR

Gerald J. Martyniak, Indianapolis, Ind., assignor to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 38,742, May 14, 1979, Pat. No. 4,254,448. This application Oct. 6, 1980, Ser. No. 194,179

Int. Cl.³ H05K *1/18*

U.S. Cl. 361—404 **11 Claims**



1. An assembly comprising:

a printed circuit board comprising a molded thermoplastic substrate having printed circuit lead-contact areas deposited on a mounting surface of the substrate;

a plurality of preformed molded thermoplastic pins integral with said substrate and molded concurrently therewith to form extensions thereof, said pins each projecting outward of the adjacent outermost surface areas of said mounting surface, and each being disposed adjacent to positions where an electrical component is to be received so as to be supportively backed by part of said substrate; and

an electrical component having leads projecting therefrom as portions thereof and mounted on the substrate so that portions of the component are located outward of the adjacent outermost surface areas of said mounting surface and adjacent to outer portions of the pins, and so that portions of the component leads are aligned with the contact areas of the printed circuit, the pins having at their outer ends plastic locking portions formed about said adjacent portions of the component by deformation of said ends after mounting of said component on said substrate so as to render said component simultaneously engaged on opposite sides thereof by, respectively, said locking portions and a firm seat provided for said component on the substrate side thereof, and so as by such simultaneous engagement to provide a fastening without play of said component to said substrate; and

the component leads being attached to the contact areas.

4,361,863

ILLUMINATING DEVICE HAVING A CURVED OPTICAL CONDUCTOR

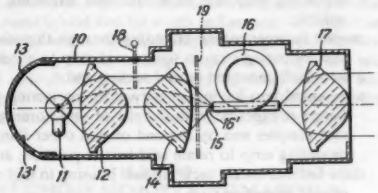
Willi Hagner, Solms, Oberbiel, Fed. Rep. of Germany, assignor to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Continuation of Ser. No. 972,630, Dec. 22, 1978, abandoned. This application Oct. 16, 1980, Ser. No. 197,698

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757543

Int. Cl.³ F21V *7/00*

U.S. Cl. 362—32 **13 Claims**



1. An illuminating device for regulating the color temperature of a light beam having a substantially homogeneous cross-sectional flux comprising:

(a) a light source,

(b) a single optical conductor having a uniform cross section, said optical conductor having an inlet and an outlet surface and a curved body portion therebetween, said inlet and outlet surfaces being positioned in planes parallel to one another and said curved body portion forming substantially a full circular ring between said inlet and outlet surfaces,

(c) optical means for directing light from said light source in a path to the inlet surface of said optical conductor, and

(d) color filter means affecting the color temperature of light arranged transversely displaceable to the path of the light beam between said light source and said inlet surface of said optical conductor,

whereby said optical conductor provides said substantially homogeneous flux at said outlet surface.

4,361,864

VEHICLE LIGHT WITH FASTENER ARRANGEMENT

Lloyd W. Spiro, 20510 Napa St., Canoga Park, Calif. 91306

Filed Mar. 16, 1981, Ser. No. 244,237

Int. Cl.³ B64F *1/20*

U.S. Cl. 362—62 **3 Claims**

1. A vehicle light comprising:

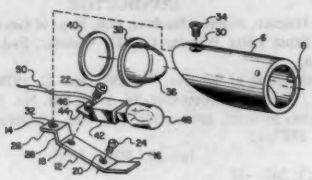
a housing formed of lightweight tubular material having the rear end cut at an angle to its axis and having the front end upset to form an inwardly projecting rim;

a mounting strip having a pair of holes formed therein adjacent the respective ends of said strip and having flange means projecting upwardly from each end of said strip, one of said flange means being generally L-shaped and having one leg extending parallel to said housing and the other leg connecting said one leg with said mounting strip, the other of said flange means extending parallel to said

housing and engageable with the forward portion of said housing to retain said housing ;

a lamp socket having a rearwardly projecting mounting tab projecting at an angle such as to cause the axis of said socket to coincide with the axis of said housing and having a hole formed in said mounting tab and having a wire for connecting said lamp socket to an energizing source;

first fastener means extending through said hole in said mounting tab and through the hole in said mounting strip adjacent said L-shaped flange to secure said socket to said



mounting strip and to secure said mounting strip to a vehicle;

second fastener means extending through the other hole in said mounting strip to secure said strip to a vehicle;

a lamp bulb mounted in said socket; and

a spherical lens having an outwardly projecting peripheral flange engageable with the rim of said housing ahead of said dimples and by the end of said other flange of said mounting strip to retain said lens in position; and

third fastener means securing said housing to said one flange of said mounting strip.

4,361,865

SWITCHING REGULATOR TYPE POWER SUPPLY CIRCUIT

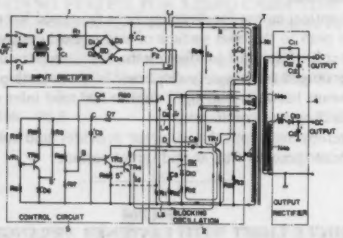
Masahiro Shono, Osaka, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Apr. 6, 1981, Ser. No. 251,059

Claims priority, application Japan, Apr. 11, 1980, 55-48530

Int. Cl.³ H02M *3/335*

U.S. Cl. 363—19 **8 Claims**



1. A switching regulator type power supply circuit, comprising:

transformer means having an input winding, an output winding, and a feedback winding and a detecting winding electromagnetically coupled to said input winding and said output winding,

a switching transistor having a base, a collector and an emitter and for on/off controlling a direct current input being applied thereto,

detecting resistor means being interposed in a path allowing for a flow of a collector-emitter current flowing through said collector-emitter of said switching transistor,

said input winding, said collector and emitter of said switching transistor and said detecting resistor means being connected in the described order in series with said direct current input,

said base of said switching transistor being connected to one end of said feedback winding of said transformer means,

a series connection of a capacitor and a diode connected between said one end and the other end of said feedback winding of said transformer means in the described order, said capacitor being charged with a voltage developed across said feedback winding of said transformer means on the occasion of non-conduction of said switching transistor,

transistor switching means having an input terminal, an output terminal and a control terminal,

connection means for connecting said input terminal of said transistor switching means to the junction of said diode and said capacitor and for connecting said input terminal of said transistor switching means to said emitter of said switching transistor, and

voltage supplying means for supplying to said control terminal of said transistor switching means a composite voltage of a direct current voltage changeable in accordance with the voltage obtained from said detecting winding and the voltage developed across said detecting resistor, whereby said transistor switching means is rendered conductive when said voltage at said control terminal of said transistor switching means becomes lower by a predetermined value than the voltage at said junction of said diode and said capacitor and said switching transistor is turned off by the voltage at said capacitor being applied between said base and emitter of said switching transistor.

4,361,866

POWER CONVERTER APPARATUS

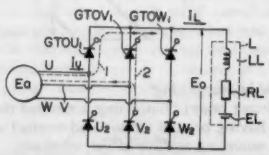
Seiya Shima; Hiroaki Kuroka, both of Katsuta; Takeki Ando, Nakamachi; Toshiaki Kurosawa; Hiromi Inaba, both of Katsuta, and Yoshio Sakai, Nakamachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 7, 1981, Ser. No. 261,668

Claims priority, application Japan, May 16, 1980, 55-65604

Int. Cl.³ H02M *7/155*

U.S. Cl. 363—129 **15 Claims**



1. A power converter apparatus for effecting power conversion between an a.c. system and a d.c. system by using a full-wave bridge circuit in which at least one arm is provided with controllable switch means capable of performing a current breaking function, comprising:

phase angle control means for controlling phase angle of said switch means;

pulse width control means for controlling width of pulse which causes said switch means to perform current chopping operation; and

gate signal generating means for turning on and off said switch means with said chopping pulse of the controlled pulse width during a conduction-enabled period determined at least by said phase angle.

4,361,867

ELECTRICAL CONNECTION SYSTEM FOR RECTIFIERS

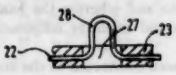
Manfred Frister, Schwieberdingen; Stefan Renner, Leonberg; Friedhelm Meyer, Illingen, and Peter Lack, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 12, 1981, Ser. No. 224,135

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1980, 3001522

Int. Cl.³ H02M 7/06

U.S. Cl. 363—145 7 Claims



1. In an electrical connection system for an alternating-current rectifier arrangement, in particular for an alternating-current bridge rectifier for a generator which can be used in a motor vehicle having an alternating current rectifier arrangement comprising a plurality of diodes (15, 17), a plurality of phase terminals (12) for receiving a multi-phase alternating current input signal, electrical conductors (22) for connecting the phase terminals with associated terminals of the diodes, and

a substantially plate-like insulating body (23) in which said electrical conductors (22) are embedded,

and including means for cooling at least a portion (28) of the surface of one of said electrical conductors (22) to a lesser extent than the remaining portion of said at least one electrical conductor (22), including

at least one further recess (27) in registration with each of said conductor portions (28) so that each of said conductor portions (28) is in less contact with said insulating body (23) than the remainder of said conductors (22), and

said portion or portions (28) of said conductors (22) protrude from said further recess or recesses (27).

4,361,868

DEVICE FOR INCREASING THE LENGTH OF A LOGIC COMPUTER ADDRESS

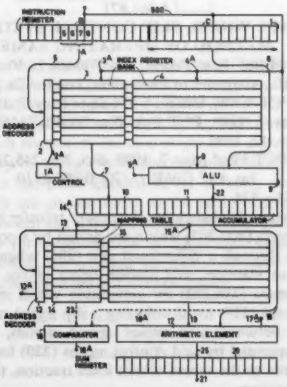
Cecil H. Kaplinsky, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 3, 1979, Ser. No. 54,534

Claims priority, application Netherlands, Jul. 6, 1978, 7807314

Int. Cl.³ G06F 7/00, 9/00, 9/34

U.S. Cl. 364—200 2 Claims



1. An address generating device for use in a digital data processing system generating a physical address for addressing a segmented random access memory, whereby an increased address length is produced without it being necessary to provide elements within the computer for separate bit slices, said device comprising an instruction register (1) having an input of a predetermined first bit width for a bit string representing an indexed address instruction, said instruction register comprising a first output for an operation code, a second output (5) for selecting an index register from an index register bank (3,4), and a third output (6) for a first relative memory address, wherein the bit width of the index register bank is at least 1.25 and at most said first bit width, said index register bank having a fourth output (7) for outputting a first group of more significant bits therefrom, and a fifth output (8) for outputting a second group of less significant bits therefrom, the second group representing a second relative memory address, said address generating device comprising first adder means (9) for receiving and adding said first and second relative memory addresses to generate on a sixth output (22) thereof a displacement number which in combination with said first group of more significant bits represents a complete logical memory address, wherein said fourth output is connected to an address input of an address segment table (14) memory, each location thereof accomodating a segment base identification to be outputted on a seventh output (19) thereof having a bit width that is at least equal to said first bit width and at most 1.5 times than said address bit width, said address generating device furthermore comprising output adding means receiving from said sixth and seventh outputs the logical memory address and segment base indentification and having an eighth output for thereon outputting an absolute address for said memory.

4,361,869

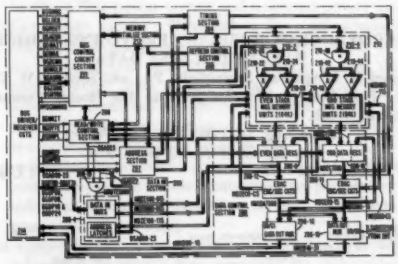
MULTIMODE MEMORY SYSTEM USING A MULTIWORD COMMON BUS FOR DOUBLE WORD AND SINGLE WORD TRANSFER

Robert B. Johnson, Billerica, and Chester M. Nibby, Jr., Peabody, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 8, 1980, Ser. No. 110,520

Int. Cl.³ G06F 13/00

U.S. Cl. 364—200 31 Claims



1. A memory subsystem for use in a system including a processing unit coupled to a multiword bus in common with said subsystem for transfer of information therebetween during bus transfer cycles of operation, said processing unit being operative to generate at least first and second types of memory requests on said bus to said subsystem, each of said requests including a multibit address, said memory subsystem comprising:

a plurality of independently addressable memory module units, each including a plurality of rows of random access memory chips;

address register means for storing a number of least significant address bits of each memory request address;

sequential decode and addressing means coupled to said address register means, to said bus and to said memory module units, said addressing means being operative to generate simultaneously a plurality of sequential row

address select signals and corresponding sequential addresses in response to said number of least significant address bits of each memory request for enabling simultaneous read out of a plurality of sequential words from storage locations specified by said sequential addresses in the rows of said chips specified by said plurality of address select signals;

command control means coupled to said bus, said control means including means for storing signals indicative of the type of memory request received from said processing unit;

a plurality of data register means, each coupled to a different one of said memory module units for receiving a different one of said plurality of data words simultaneously read out in response to each memory request;

a plurality of multiplexer circuit means, each coupled to said plurality of data register means and to different word sections of said multiword bus, one of said multiplexer circuit means being connected to said address register means; and

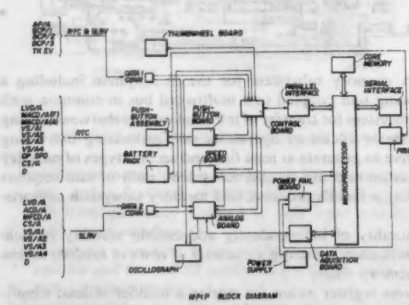
mode control means coupled to another one of said plurality of multiplexer circuit means, to said address register means and to said command control means, said mode control means being operative in response to one of said signals from said command control means indicative of said first type of memory request to enable said another multiplexer circuit means to apply one of said plurality of data words to one of said different word sections simultaneously with the application of another one of said plurality of data words by said one multiplexer circuit means to another one of said different word sections for transfer of said plurality of data words to said processing unit during a single bus cycle of operation and said mode control means being operative in response to another one of said signals indicative of said second type of memory request to enable said another one of said plurality of multiplexer circuit means to apply in succession each data word of said plurality of data words to said one of said different word sections of said multiword bus for transfer to said processing unit over successive bus cycles of operation.

4,361,870

MICROPROCESSOR CIRCUIT PROVIDING VEHICLE PARAMETER TEST DATA

Armond N. D'Agostini, Springfield, Pa., and Richard W. Dye, Jr., Port Orange, Fla., assignors to The Boeing Company, Seattle, Wash.

Filed Aug. 14, 1980, Ser. No. 178,199
Int. Cl.[3] G06F *15/20*; B60L *3/00*
U.S. Cl. 364—424 **11 Claims**



BPIP BLOCK DIAGRAM

1. A vehicle electronic testing device providing vehicle parameter data of a vehicle comprising:

a control board, wherein the control board includes a multiplexer to multiplex information entering the control board;

a thumbwheel board connected to the control board, wherein the thumbwheel board is manually operated to enter vehicle data regarding identification of the vehicle and wherein the thumbwheel board generates signals containing vehicle identification information;

a speed board connected to the control board, wherein the speed board measures vehicle speed and generates vehicle speed information;

an analog board connected to the control board, wherein the analog board differentially amplifies information signals applied thereto and wherein the analog board is further connected to and receives information from the speed board;

a pushbutton board connected to the analog board, wherein the pushbutton board is manually operated to control the electronic testing device and generates information indicating pushbutton board operation and wherein the pushbutton board is further connected to and receives information from the control board;

a first data source connected to the control board, wherein the first data source provides information comprised of a first set of parameter data;

a second data source connected to the analog board, wherein the second data source provides information comprised of a second set of parameter data;

a microprocessor, wherein the microprocessor is connected to and receives information from the control board and wherein the microprocessor converts the information into signals representing engineering unit values and wherein the microprocessor generates the signals representing engineering unit values;

a voltage supply to provide power to the vehicle electronic testing device;

a power failure board, wherein the power failure board is connected to the microprocessor and to the voltage supply and wherein the power failure board indicates power failure of the voltage supply during vehicle parameter testing;

a parallel interface circuit, wherein the parallel interface circuit is connected to the microprocessor and to the control board; and

a display, wherein the display is connected to and receives signals representing engineering unit values from the microprocessor, and wherein the values of engineering units which are represented by signals from the microprocessor are indicated by the display.

4,361,871

FAILSAFE WHEEL SLIP CONTROL SYSTEM AND METHOD OF OPERATING SAME

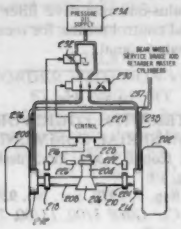
Robert G. Miller, East Peoria, and Weldon L. Phelps, Dunlap, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00539, § 371 Date May 7, 1980, § 102(e) Date May 7, 1980, PCT Pub. No. WO81/03152, PCT Pub. Date Nov. 12, 1981
PCT Filed May 7, 1980, Ser. No. 245,224
Int. Cl.[3] G06F *15/20*; B60T *8/10*
U.S. Cl. 364—426 **11 Claims**

1. In a system for balancing the power transfer between two vehicle wheels (200,202) which are driven by a common input shaft (204) through a differential unit (206) when one of said wheels loses traction, said system being of the type which includes means (216,222) for generating wheel speed signals, control means (220) for developing a slip signal related to the difference between said wheel speed signals, and means (212,214) operated by said control means (220) for applying a braking force to the wheel which loses traction, the improvement comprising:

means (226) for generating a signal representing input shaft speed, said control means (220) including means (242) for comparing wheel and input shaft speeds and preventing

actuation of the braking means (212,214) for slip control purposes until the ratio of the speed of the wheel which



loses traction to the speed of the input shaft exceeds a predetermined value.

4,361,872

MEASURING APPARATUS FOR DETERMINING THE EFFECTIVE VALUE OF THE POWER DEMAND OF AN ENERGY CONSUMER OVER A PERIOD OF CALCULATION

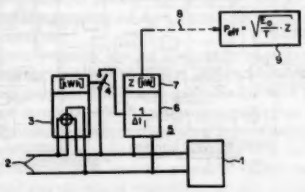
Alfred Spalti, Zug, Switzerland, assignor to LGZ Landis & Gyr Zug AG, Zug, Switzerland

Continuation-in-part of Ser. No. 973,623, Dec. 27, 1978, abandoned. This application Jun. 12, 1980, Ser. No. 158,868

Claims priority, application Switzerland, Dec. 29, 1977, 16168/77

Int. Cl.³ G06F *15/20*

U.S. Cl. 364—483 **4 Claims**



1. A measuring apparatus for determining the effective value of the power of an energy consumer over a period of calculation, the apparatus comprising; a pulse generator associated with a consumption meter, for producing fixed quantity pulses each of which represents the consumption of a predetermined fixed quantity of energy; a measuring and calculating means connected to the pulse generator, for forming measurement values which are proportional to the reciprocal of the time intervals between the individual fixed quantity pulses; a summing means for summing the measurement values; and an evaluation means for forming the effective value P_{eff} of the power in accordance with the relationship:

$$P_{eff} = \sqrt{\frac{E_o}{T} \cdot Z}$$

wherein E_o denotes the fixed quantity of energy, T denotes the duration of the period of calculation, and Z denotes the sum of the measurement values.

4,361,873

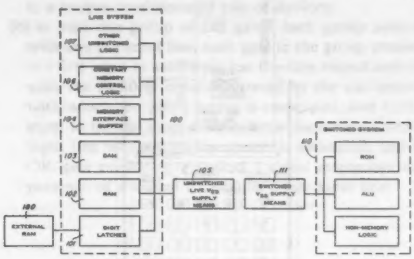
CALCULATOR WITH CONSTANT MEMORY

Leroy D. Harper, Lubbock, and Arthur B. Oliver, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 47,431, Jun. 11, 1979, abandoned. This application Apr. 8, 1981, Ser. No. 252,096

Int. Cl.³ G06F *1/00*

U.S. Cl. 364—707 **5 Claims**



1. An electronic data processing system having a fully powered state and a low power standby state comprising:

a manually operable input means for generating input signals indicative of input data and operational functions, said indicated operational functions including a fully powered state selection signal and a low power standby state selection signal;

an electric power source;

a power supply control means connected to said electric power source and responsive to said selection signals, having a first power output and a second power output, said power supply control means for continuously coupling said electric power source to said first power output, for coupling said electric power source to said second power output upon receipt of said fully powered state selection signal and for decoupling said electric power source from said second power output upon receipt of said low power standby state select signal;

an arithmetic logic means powered via said second power output, responsive to said input signals for performing said indicated operational functions on said input data for generating output data;

an output means powered via said second power output, responsive to output data generated by said arithmetic logic means, for indicating a certain condition to an operator corresponding to said output data;

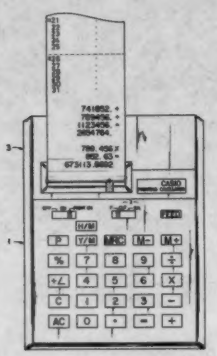
a read/write memory means powered via said first power output for entering, storing and recalling data;

a memory control means powered via said first power output for selectively coupling said output data to said read-write memory means for entry and storage therein and for selectively coupling recalled data from said read/write memory means to said arithmetic logic means according to said indicated operational functions, said memory control means being responsive to said selection signals and further including means for enabling entry of data into said read/write memory means upon receipt of said fully powered state selection signal and for inhibiting entry of data into said read/write memory means upon receipt of said low power standby state selection signal.

4,361,874
SCHEDULE TABLE PRINTING APPARATUS

Takeshi Yasuda, Akishima, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Sep. 10, 1980, Ser. No. 185,803
Claims priority, application Japan, Sep. 20, 1979, 54-121419; Sep. 28, 1979, 54-124186; Mar. 26, 1979, 55-39315
Int. Cl.³ G06F 3/12, 15/02
U.S. Cl. 364—710 11 Claims



1. A schedule table printing apparatus comprising:

a keyboard for entering data defining the period of time assigned to a table to be printed;

first memory means coupled to said keyboard for storing data entered by operating said keyboard;

data entering means coupled to said first memory means for entering, by operating said keyboard, data representing regular intervals within the period of time represented by data read from said first memory means;

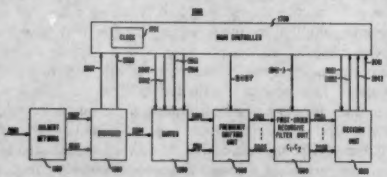
second memory means coupled to said data entering means for storing data read out from said data entering means; and

printing means coupled to said second memory means for printing data read out from said second memory means, said data read out from said second memory means being printed one by one as they are sequentially supplied from the second memory means, said printing means further including means for feeding a sheet of paper for a distance corresponding to said regular interval, upon printing one data read out from said second memory means.

4,361,875
MULTIPLE TONE DETECTOR AND LOCATOR

David Hertz, Akko, Israel; Robert P. Kurshan, New York, N.Y., and David Malah, Kiryat-Bialik, Israel, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 23, 1980, Ser. No. 162,261
Int. Cl.³ G06F 15/31
U.S. Cl. 364—724 32 Claims



1. Circuitry for detecting the frequency of a discrete-time input signal

CHARACTERIZED BY

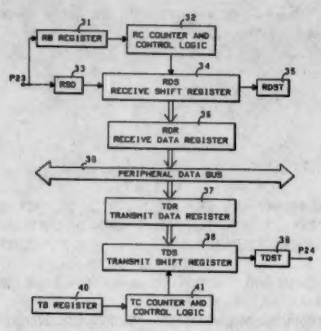
control means (1700) for operating on said input signal by sequentially decimating said input signal to provide a decimated signal; and

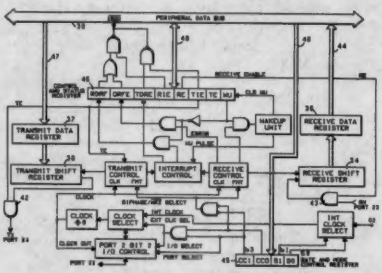
first-order, modulus-one recursive filter means (1500), responsive to said control means, for receiving and processing said decimated signal.

4,361,876
MICROCOMPUTER WITH LOGIC FOR SELECTIVELY DISABLING SERIAL COMMUNICATIONS

Stanley E. Groves, Round Rock, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 5, 1978, Ser. No. 939,742
Int. Cl.³ G06F 3/00, 13/00, 7/00
U.S. Cl. 364—900 3 Claims





1. In a single chip microcomputer having a processor and a data bus coupled thereto, a serial communication control circuit for selectively coupling serial information received on a serial I/O line to the processor via the data bus, the control circuit comprising:

storage means coupled to said processor via said data bus, for storing a first predetermined binary logic state in response to receiving a first control signal for enabling said serial communication circuit provided by said processor via said data bus, and a second predetermined binary logic state in response to receiving a second control signal for disabling said serial communication circuit,

receiver means coupled between said data bus and said serial I/O line, for receiving serial information on said serial I/O line, and for coupling said received serial information to said data bus only when said storage means is storing said first predetermined binary logic state, and

control means coupled to said receiver means and to said storage means, for applying said second control signal to said storage means in response to said receiver means receiving predetermined serial information on said serial I/O line, whereby said processor may selectively ignore

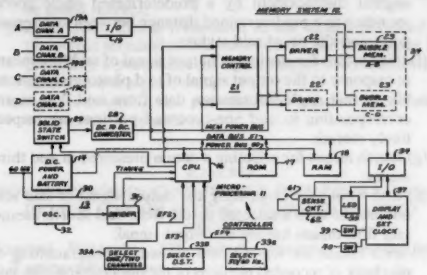
serial information on said serial I/O line by storing said first logic state in said storage means to decouple the serial information from said data bus thereby relieving said processor of the burden of recovering all of every message impressed on said serial I/O one.

4,361,877

BILLING RECORDER WITH NON-VOLATILE SOLID STATE MEMORY

Robert E. Dyer, and Murray C. Carney, both of Dunwoody, Ga., assignors to Sangamo Weston, Inc., Atlanta, Ga.

Filed Feb. 5, 1980, Ser. No. 118,829
Int. Cl.³ G06F *15/21*
U.S. Cl. 364—900 **53 Claims**



1. Data recording apparatus for providing a record of event measurement data from at least one data source comprising:

input means for receiving data signals representing said event measurement data;

timing means for generating time reference signals representative of real time;

controller means for receiving said data signals from said input means and being responsive to said time reference signals for generating real time data signals defining time intervals and for generating data word signals representative of the quantity of data signals received during each time interval;

first memory means having a plurality of storage locations for storing said real time data signals and said data word signals associated with said intervals for each of a number of said intervals which comprise a collection period; and

second memory means comprising non-volatile, solid state memory means, which retains stored data in the absence of power to said second memory means and memory control circuit means responsive to said controller means for transferring said real time data signals and said data word signals accumulated in said first memory means to said non-volatile memory means at the end of a collection period for storing the same in predetermined relation.

4,361,878

DEGRADABLE LRU CIRCUIT

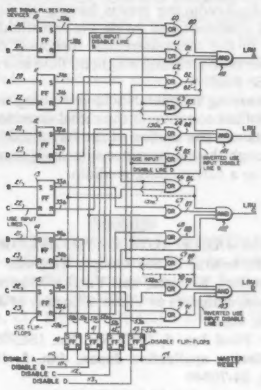
Thomas A. Lane, New Brighton, and David M. Webb, Blaine, both of Minn., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Oct. 27, 1980, Ser. No. 200,876
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—900 **2 Claims**

1. A least recently used (LRU) resolving network of the type having a plurality of use input lines, each use input line having assigned to it one existing device whose use history is to be included in the resolution and carrying a logical 1 use input signal pulse generated responsive to each use of the assigned device, and having at least one use input disable line, each such use input disable line associated with one use input line, and each use input disable line when carrying a logical 1 signal indicating to the network that the associated use input line and the device assigned to it are to be ignored in resolving the LRU status of the devices, comprising:

(a) a plurality of use flip-flops for recording the relative use history of all said devices, each use flip-flop having set and reset inputs, and set and reset outputs producing signals logically inverted with respect to each other and each output respectively associated with its flip-flop's similarly named set and reset inputs, each of said outputs producing a logical 1 signal responsive to a logical 1 use input signal pulse received at its associated input, and the inputs of each use flip-flop connected to the use input lines assigned to a unique combinatorial pair of devices;

(b) at least one group of OR gates, each group associated with one use input line, each gate in the group connected at a first input to a different use flip-flop output associated with the flip-flop input connected to the use input line with which the gate's group is associated, and a second input to the use input disable line associated with the use input line with which the group is associated, and each OR gate producing a logical 1 signal responsive to the presence of a logical 1 signal on either input line;



(c) means for logically inverting the signal on each use input disable line; and

(d) a plurality of multiple input AND gates, each AND gate associated with one use input line and indicating with a logical 1 signal output that the device assigned to the AND gate's associated use input line is the LRU device when all inputs to the AND gate are logical 1's, and each receiving as inputs

(i) the output of each OR gate connected to both (A) a use input disable line not associated with the use input line with which the AND gate is associated and (B) to the inversion of each use flip-flop output associated with the use flip-flop's input connected to the use input line with which the AND gate is associated,

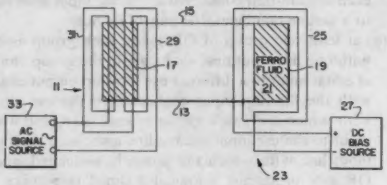
(ii) all of the use flip-flops' outputs not otherwise connected to OR gate inputs and associated with an input connected to the use input line with which the AND gate is associated, and

(iii) the output of the means inverting the signal on the use input disable line associated with the use input line with which the AND gate is also associated.

4,361,879
FERROFLUID TRANSDUCER

Pieter S. Dubbelday, Merritt Island, and Robert W. Timme, Orlando, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 25, 1980, Ser. No. 180,547
Int. Cl.³ H04R *15/00*
U.S. Cl. 367—141 **7 Claims**



1. An underwater, low-frequency sound generator comprising:

a toroidal container having a rigid bottom and a rigid top, and elastic inner and outer cylindrical side walls;

a ferrofluid filling the toroidal container; and

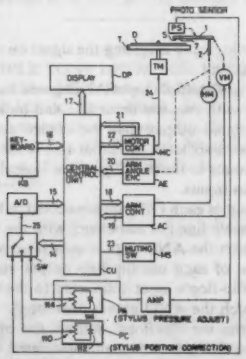
magnetic-field-reducing means having elements inside the toroidal container and inside the ferrofluid itself for producing in the circumferential direction of the toroidal container both a biasing magnetic field and a time-varying magnetic field,

the time-varying magnetic field providing a force causing the ferrofluid to move in the radial direction of the toroidal container, the motion of the ferrofluid being transmitted through the elastic outer side walls to supply acoustic motion to a surrounding medium.

4,361,880
PROGRAMMABLE AUTOMATIC RECORD PLAYER

Masatsugu Kitamura; Hideo Onoye; Tsuyoshi Ono; Fumiaki Ohno; Yukihiro Kishima, and Yutaka Morita, all of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Jun. 4, 1980, Ser. No. 156,775
Claims priority, application Japan, Jun. 5, 1979, 54-70939; Jun. 5, 1979, 54-70940
Int. Cl.³ G11B *17/06*
U.S. Cl. 369—33 **20 Claims**



1. A programmable automatic record player comprising:

(a) a turntable arranged to be rotated by a turntable drive motor;

(b) a tonearm equipped with a pickup having a stylus, a vertical position control motor and a horizontal position control motor for controlling vertical and horizontal angular displacement of said tonearm;

(c) a photo sensor assembly mechanically connected to said tonearm for sensing non-recorded portions on a phonograph disk placed on said turntable, said photo sensor assembly being positioned so that the point sensed thereby is slightly closer to the center of said turntable than is the tip of said stylus, and the locus of said sensed point substantially coincides with the locus of said stylus tip when said tonearm is moved horizontally, said photosensor assembly having an output signal;

(d) first means for detecting the horizontal angular displacement of said tonearm;

(e) second means for modifying the detected horizontal angular displacement by a predetermined angle corresponding to a predetermined distance between said sensed point and the tip of said stylus;

(f) third means for storing an output signal of said first means in response to the output signal of said photosensor assembly so that angle information data from said first means corresponding to said non-recorded portions are respectively stored;

(g) fourth means for selecting a datum prestored in said third means;

(h) fifth means for comparing the output signal of said second means with a selected datum from said fourth means, said fifth means having an output signal;

(i) sixth means for storing data related to programming of playback of recorded portions of the phonograph disk said data being read out for controlling of said fourth means;

(j) seventh means for producing driving currents respectively applied to said vertical position control motor and to said horizontal position control motor, said seventh means controlling said tonearm in response to the output signal of said fifth means;

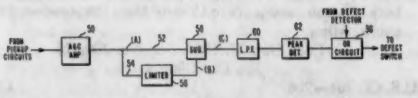
(k) eighth means for controlling said seventh means so that said photosensor assembly scans the surface of said phonograph disk prior to programmably playing back the recorded portions of the phonograph disk, said eighth means reading said data from said sixth means for further controlling said seventh means so that said recorded portions of the phonograph disk are played back in the programmed sequence; and

(l) ninth means for manually changing said predetermined angle corresponding to the predetermined distance when the actual distance between said sensed point and the tip of said stylus differs from said predetermined distance.

4,361,881
VIDEO DISC PLAYER WITH RFI REDUCTION CIRCUIT INCLUDING SIGNAL SUBTRACTION

Jon K. Clemens, Skillman, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 21, 1980, Ser. No. 208,984
Int. Cl.³ H04N *5/80*
U.S. Cl. 369—126 **4 Claims**



1. In a video disc player of the type having: pickup apparatus for recovering an information signal recorded on a disc in the form of a modulated carrier signal; demodulation apparatus coupled to said pickup apparatus for demodulating said modulated carrier; defect detection apparatus coupled to said pickup apparatus for detecting defects in the recovered signal; and defect compensation apparatus coupled to said demodulation apparatus and to said defect detection apparatus and respon-

sive to the operation of the defect detection apparatus for providing a substitute signal in place of the recovered signal in the playback display of said information signals during occurrences of defects in the recovered signal; said player being subject to interference with normal playback display operations due to the pickup of unrecorded, externally applied signals; apparatus for reducing the influence of said external signals comprising:

an amplifier responsive to the signal provided by said pickup apparatus;

first and second conductive paths connected to said amplifier, said first path including a signal amplitude limiter;

subtractive combiner means connected to said limiter and to said second path for subtractively combining the limited signals and the signals on said second path and for providing a subtractively combined output signal at an output terminal thereof;

peak detector means responsive to the signals provided at the output terminal of said subtractive combiner means for providing a peak detected signal related to said combiner means output signal; and

means for coupling said peak detected signal to said defect compensation apparatus.

4,361,882

SOUND REPRODUCING DEVICE INCORPORATING A DEVICE FOR SELECTING A DESIRED RECORD GROOVE

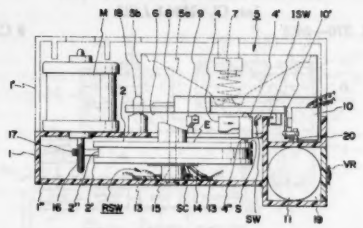
Katsumi Watanabe, 371 Ozenji, Tama-ku, Kawasaki-shi, Kanagawa-ken, Japan

Filed Nov. 24, 1980, Ser. No. 209,910

Claims priority, application Japan, Mar. 18, 1980, 55-34435

Int. Cl.³ G11B *7/22*

U.S. Cl. 369—30 **7 Claims**



1. An improved sound reproducing device for selectively reproducing sounds recorded in a record disc being rotatably supported on a chassis and having an electric motor for driving said record disc when energized, a power source for energizing said motor, a tone arm swingably disposed on said chassis and resiliently urged toward the starting point of sound reproduction and away from the face of the record disc, a speaker, a sound transmitting member which is normally in contact with a side of said tone arm opposite to said record disc for transmitting reproduced sonic vibration to said speaker, a pickup forming a part of the tone arm and disposed between said transmitting member and said record disc, a stylus force spring for causing relative movement between said record disc and tone arm so as to produce a desired stylus force therebetween, a return arm disposed between said transmitting member and said record disc such that it is pushed by said tone arm upon the arrival of said tone arm at the end point of said sound reproduction path to ride on an upright cam disposed at the central portion of said record disc so as to enlarge the distance between said transmitting member and said record disc against the stylus force to thereby permit said tone arm to return to the starting point of said sound reproduction, wherein the improvement comprises:

an electromagnetic actuator having a movable blade which sustains said sound transmitting member or record disc against the stylus force of said stylus force spring and releasing said sound transmitting member or record disc when energized;

a switching transistor connected to said motor and said power source to form a first closed circuit when said transistor is turned on;

a self-holding switch connected between said transistor and said power source so as to turn on said transistor when said self-holding switch is closed, said self-holding switch being designed such that it is opened when said tone arm is at the starting point of said sound reproduction path but it is closed while said tone arm is moving toward the end portion of said sound reproduction path;

a manually operated start switch connected in parallel with said self-holding switch;

an inhibitor switch adapted to be closed and opened when the distance between said record disc and said sound transmitting member is beyond and below a predetermined value, respectively;

a rotary switch including a movable contact and a fixed contact;

said movable contact being adapted to rotate with the rotation of said record disc so as to successively make contact with said fixed contact, said fixed contact being disposed such that said fixed contact is disposed at a position with a predetermined positional relationship with a position at which a pick-up of said tone arm descends so as to engage a selected recorded groove at a point slightly before the starting point of said sound reproduction path, said fixed contact further being correspondingly connected to said start switch so that said power source, said inhibitor switch, said electromagnetic actuator, said rotary switch and said start switch may form a second closed circuit through the selected start switch and the selected fixed contact corresponding to said start switch.

4,361,883

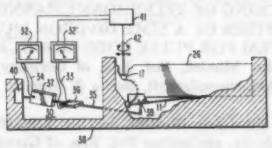
CARTRIDGE FORCE AND BIAS ADJUSTMENT GAGE

Byron K. Taylor, Carmel, and Gerald D. Pyles, Danville, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 28, 1980, Ser. No. 144,293

Int. Cl.³ H04N *5/76*; G11B *3/00, 17/00*

U.S. Cl. 369—55 **10 Claims**



1. An apparatus for determining the positional relationship of a stylus arm assembly with respect to a cartridge in which the assembly is mounted, said apparatus comprising:

a fixture means for receiving and holding the cartridge in a predetermined fixed position;

a cantilever member having a first end arranged to receive the stylus arm when the cartridge is placed in said fixture, a second end of said cantilever member being secured to said fixture so that the longitudinal axes of the stylus arm and the cantilever member are generally parallel;

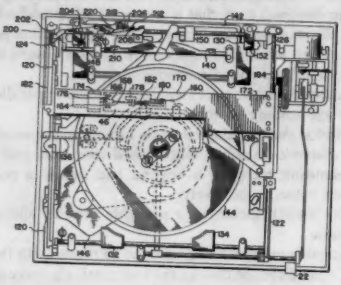
transducer means coupled to the cantilever member to measure the deflection of the cantilevered member created by the stylus arm; and

means connected to the transducer means to exhibit the deflection.

4,361,884
VIDEO DISC PLAYER HAVING CLICK MECHANISM

Philip E. O'Connell, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 3, 1980, Ser. No. 203,757
Int. Cl.³ G11B *27/34*
U.S. Cl. 369—77 **6 Claims**



1. In a record player for recovering prerecorded information from a disc record subject to removable occupancy of a protective caddy; an occupied caddy being inserted into said player along a path to load an enclosed record therein; said player being provided with a record extracting mechanism for removing an enclosed record from said caddy for retention in said player during the withdrawal of the caddy sleeve subsequent to the arrival of an occupied caddy at a fully inserted location along said path in said player; apparatus comprising:

(A) a sensing lever subject to engagement with said caddy at an intermediate location along said path during the insertion of said caddy into said player; motion of said caddy from said intermediate location to said fully inserted location effecting displacement of said sensing lever;

(B) means, responsive to said displacement of said sensing lever, for providing an audible indication as said caddy reaches said fully inserted location in said player; and

(C) means for returning said sensing lever to a starting position upon the caddy withdrawal.

4,361,885
SYSTEM FOR CHANNEL-SPECIFIC RELEASING AND BLOCKING OF TELEPHONE CHANNELS IN CONVERTERS OF A TIME DIVISION MULTIPLEX SYSTEM FOR PULSE CODE MODULATION

Claus Ehricke, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 29, 1981, Ser. No. 229,310
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1980, 3007586
Int. Cl.³ H04J *3/04*
U.S. Cl. 370—13 **2 Claims**

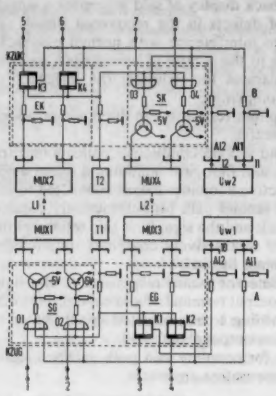
1. In a system for releasing and blocking telephone channels in signaling converters of a time division multiplex system for pulse code modulation in a terminal having at least one channel-specific outgoing signaling converter and a monitoring device with an alarm signal occurring immediately in response to faults and occurring with chronological differentiation in response to disturbances, the improvement therein comprising:

a receiving portion of the outgoing signaling converter including at least one first flip-flop for begin and end of conversation characters having a setting input;

a first alarm output of the monitoring device connected to said setting input;

a transmitting portion including NOR gates for seizure/-release and dialing connected to said output of the monitoring device;

a second alarm output of the monitoring device for a second alarm signal; and

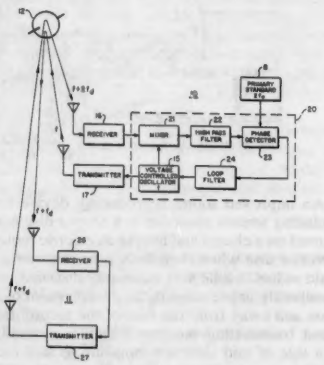


at least one second flip-flop in said receiving portion for the idle/blocking condition including a setting input connected to said second alarm output.

4,361,886
SATELLITE COMMUNICATION SYSTEM

Frank S. Gutleber, Little Silver, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 31, 1980, Ser. No. 174,293
Int. Cl.³ H04J *1/02*
U.S. Cl. 370—69.1 **8 Claims**



1. A frequency division multiple access satellite communication system having a master ground node and at least one slave ground node, each of said nodes comprising

a primary frequency standard at said master node for supplying a precisely maintained standard frequency clock f_o;

a phase lock loop at said master node including a voltage controlled oscillator of frequency f which establishes the pulse repetition interval during which message information occurs,

means for transmitting from said master node by way of said satellite on a suitable radio frequency carrier the video signal of frequency f from said voltage controlled oscillator to said slave node which arrives at said slaved node shifted in frequency by f_d where f_d is the doppler shift encountered during the transmission of energy between

said nodes owing to the relative motion between said satellite and said nodes,

means at said slave node for retransmitting on said same carrier by way of said satellite to said master node the doppler-shifted video signal received at said slave node which arrives at said master node with the frequency $f+2f_d$,

said phase lock loop responding to the received doppler-shifted timing control signal of frequency $f+2f_d$ on said radio frequency carrier and to the frequency-doubled output of said primary frequency standard for locking the frequency of said voltage controlled oscillator to a value f_o-f_d, and

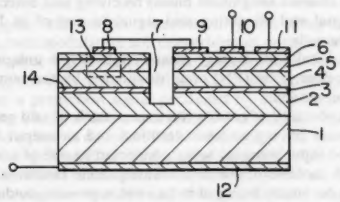
means for transmitting by way of said satellite from said master node to said slave node the video signal of pulse repetition frequency f_o-f_d which arrives doppler-shifted at said slave node as a timing signal at the standard frequency f_o.

4,361,887

SEMICONDUCTOR LIGHT EMITTING ELEMENT

Michiharu Nakamura; Motohisa Hirao, both of Tokyo; Shigeo Yamashita, Hachioji; Tadashi Fukuzawa, Tokyo, and Junichi Umeda, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 29, 1980, Ser. No. 125,779
Claims priority, application Japan, Mar. 2, 1979, 54-23453
Int. Cl.³ H01S *3/19*
U.S. Cl. 372—50 **9 Claims**



1. A semiconductor light emitting element comprising:

a semiconductor substrate,

a laminate region of semiconductor layers having at least a first, a second and a third semiconductor layer formed over said substrate and having a p-n junction defined therein, said first and third semiconductor layers having smaller refractive indices and greater forbidden band gaps than said second semiconductor layer and being opposite in conductivity type to each other to determine laser oscillation,

a field effect transistor section comprising a fourth semiconductor layer having a high resistivity and formed over said third semiconductor layer and

a fifth semiconductor layer formed on said fourth semiconductor layer, said

field effect transistor section having first and second electrodes and a gate electrode disposed between said first and second electrodes formed on said fifth layer,

means for serving as an optical resonator for emitting light in the lengthwise direction of said p-n junction, and

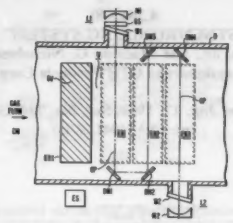
first means formed on one surface of said laminate region and second means formed on said substrate for injecting current into said third semiconductor layer, said first means for injecting current being short-circuited with said first electrode of said field effect transistor section.

4,361,888

TECHNIQUE FOR INCREASING THE EFFICIENCY OF LOW PRESSURE, SHORT PULSE LASER SYSTEMS

Richard L. Hunstad, Forest Hills, and William H. Kasner, Penn Hills Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 24, 1980, Ser. No. 163,021
Int. Cl.³ H01S *3/093*
U.S. Cl. 372—55 **13 Claims**



1. A method for extracting energy from a given volume of an excited active laser gas medium of a laser system operated in a short pulse output mode wherein the active laser gas medium includes a lasing gas component and a transfer gas component, the transfer gas component storing energy upon excitation of the active laser gas medium and transferring energy to the lasing gas component via collisional interaction, and wherein a single output pulse from said given volume of said excited active laser gas medium does not deplete the energy stored in the transfer gas component, comprising the step of,

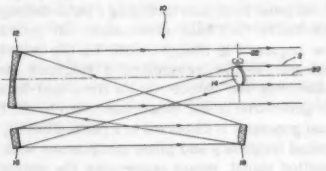
developing multiple output pulses from said given volume of excited active laser gas medium by establishing a time delay between consecutive output pulses during which time delay energy is transferred from said transfer gas component to said lasing gas component.

4,361,889

GRATING TUNED UNSTABLE RESONATOR LASER CAVITY

Larry C. Johnson, Princeton, N.J., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 6, 1980, Ser. No. 175,815
Int. Cl.³ H01S *3/086*
U.S. Cl. 372—95 **8 Claims**



1. A tunable, unstable resonator laser cavity, comprising:

a concave reflector for reflecting incident spherical electromagnetic waves as planar waves along an output axis to form an output beam;

a plane grating on said output axis; having means for radjusting an orientation of said plane grating for line tuning of the cavity;

a planar reflector located off said output axis and in proximity to said concave reflector; and

a convex reflector located off said output axis and in proximity to said grating;

said plane grating being positioned to reflect a portion of the

plane electromagnetic waves of said output beam to impinge on said planar reflector;

said planar reflector being positioned to reflect incident plane electromagnetic waves as plane waves to impinge on said convex reflector; and

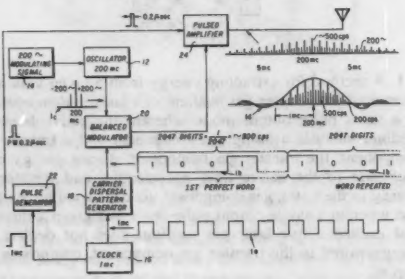
said convex mirror being positioned to reflect incident plane electromagnetic waves as spherical waves to impinge on said concave reflector.

4,361,890

SYNCHRONIZING SYSTEM

James H. Green, Jr., and Madison G. Nicholson, Jr., both of Snyder, N.Y., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jun. 17, 1958, Ser. No. 744,034
Int. Cl.³ H04L *9/00*
U.S. Cl. 375—1 **12 Claims**



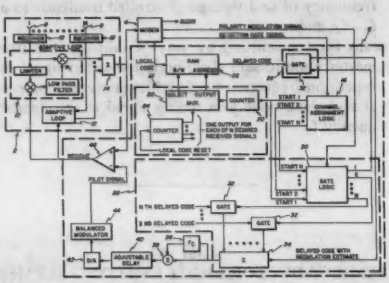
12. A dispersed carrier communication system which comprises: a transmitter including an rf generator, a pulse generator including a pulse shifting register with regeneration feedback connections, a message modulating circuit, a balanced modulator, means modulating the output of said rf generator with the output of said pulse generator in said balanced modulator to disperse said rf energy over a broad band of the frequency spectrum, and means for transmitting said energy so modulated and dispersed; and, a receiver including an rf reception circuit to receive said transmitted energy, a mixer circuit connected to said rf reception circuit, a tuned IF amplifying circuit connected to the output of said mixer circuit, a local rf generator having an output signal frequency which is removed from the output frequency of the rf generator in said transmitter by the frequency to which said IF amplifying circuit is tuned, a local pulse generator including a pulse shifting register with regenerative feed-back connections for providing the same pulse sequence as that provided by the corresponding pulse generator in the transmitter, a balanced modulator, means connecting the output signals from said local rf and pulse code generators to said modulator whereby the rf energy of said local generator is dispersed in a pattern having substantially identical frequency and phase components with those of the transmitted signal, means connecting the output of said local balanced modulator to said mixer, a local source of timing pulses for controlling the signal frequency of said local code generator, a frequency shifting circuit for changing the frequency of the pulses from said timing source as applied to said code generator, an amplitude detector connected to said IF amplifier, a frequency control circuit for controlling the operation of said frequency shifting circuit responsive to the output of said IF amplitude detector, a phase shift circuit adapted to change periodically the phase timing of the output of said local pulse generator, a phase sensitive circuit for detecting the effect of said phase changes on the output of said IF amplifier, a control circuit for adjusting the output of said timing pulse source in response to signals from said phase sensitive circuit, and means for detecting the message modulation from the output of said IF amplifier.

4,361,891

SPREAD SPECTRUM SIGNAL ESTIMATOR

Helmut Lobenstein, Utica, and Marshall K. Quick, Whitesboro, both of N.Y., assignors to General Electric Company, Utica, N.Y.

Filed Dec. 22, 1980, Ser. No. 218,899
Int. Cl.³ H04B *15/00*
U.S. Cl. 375—1 **6 Claims**



1. A signal estimator utilizing an array output signal applied to the input of a communication modem and produced from an adaptive array processor in response to a received pseudo noise communication signal, and a detection gate signal and a polarity modulation signal from the communication modem in order to generate a signal estimate of a desired signal, said signal estimator comprising:

(a) a channel assignment means receiving said detection gate signal and allocating said signal to one of its N output channels;

(b) a local code storage means containing a unique pseudo random noise (PN) code designated by the communication modem;

(c) a plurality of read/write means, each of said read/write means having an input terminal and an output terminal, said input terminal being connected to one of said N output channels of said channel assignment means, said read/write means being able to read a pseudo random noise (PN) code from said local code storage means;

(d) a gating means receiving said pseudo random noise (PN) code from said read/write means and weighting said code with said polarity modulation signal from the communication modem to yield a pilot signal; and

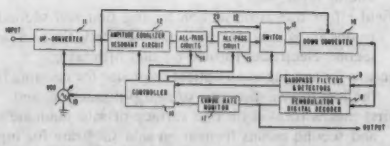
(e) a subtraction means calculating a residue signal by subtracting said pilot signal from said array output signal.

4,361,892

ADAPTIVE EQUALIZER

Gary D. Martin, Andover, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 3, 1980, Ser. No. 203,646
Int. Cl.³ H04B *3/14*
U.S. Cl. 375—14 **7 Claims**



1. An adaptive equalizer comprising in cascade:

an amplitude equalizer circuit (12), having an amplitude

bump frequency, and a plurality of n+1 all-pass circuits (14,15), each having a delay bump frequency;

the input port of the first of said cascade of circuits (12,14,15) constituting the equalizer input port, and the output port of the last of said circuits constituting the equalizer output port;

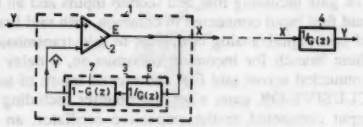
controller means (18), responsive to the relative amplitudes of selected frequency components within the equalizer output signal, for adjusting the magnitudes and bandwidths of said amplitude and delay bumps and the frequencies of said amplitude and delay bumps;

said controller means (18) further controlling the number of all-pass circuits in said equalizer in response to the output of an error rate monitor (17) connected to the output port of said equalizer.

4,361,893
TRANSMISSION SYSTEM USING DIFFERENTIAL PULSE CODE MODULATION

Georges Bonnerot, Orsay les Ulis, France, assignor to Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France

Filed Nov. 15, 1979, Ser. No. 94,408
Claims priority, application France, Nov. 17, 1978, 7832508
Int. Cl.³ H03K *13/22*
U.S. Cl. 375—27 **10 Claims**



1. A digital information transmission system using differential pulse code modulation and comprising an encoder in which the differential PCM signal to be transmitted is formed by quantizing the difference signal between the incoming linear signal and a prediction signal produced by a prediction filter comprising a local decoder receiving the said differential PCM signal, and a remote decoder, the local decoder and the remote decoder comprising filters of the same structure, characterized in that these filters are constructed from one or several filtering sections arranged in cascade, each filtering section being of the purely recursive or non-recursive type with a sole coefficient differing from zero, the roundoff (or truncation) operators which operate in each filtering section and on the incoming linear PCM signal being controlled to realize these rounding (truncating) operations with a quantizing step equal to the quantizing step of the said difference signal, and characterized in that the encoder is preceded by an expansion circuit for converting the compressed PCM signal into a linear PCM signal and the decoder is followed by a compression circuit for converting the linear PCM signal into a compressed PCM signal, the sign of the signal produced by the expansion circuit being changed at the input of the roundoff (or truncation) operator provided between the expansion circuit and the encoder, the initial sign being restored at the output of the said roundoff (or truncation) operator.

4,361,894
BAND-PASS FILTER CIRCUIT

Hiroshi Kurihara, Tokyo, and Tadayoshi Katoh, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

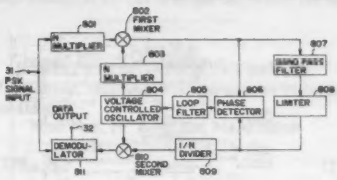
Continuation of Ser. No. 6,234, Jan. 24, 1979, abandoned. This application Aug. 18, 1980, Ser. No. 179,193
Claims priority, application Japan, Jan. 26, 1978, 53-7490
Int. Cl.³ H03D *3/06;* **H04L** *27/22*
U.S. Cl. 375—80 **6 Claims**

1. A band-pass filter circuit for carrier recovery from bursts of phase shift keyed information from at least one transmitting source, each said transmitting source transmitting at most one of said bursts per frame period, said circuit comprising

a band-pass filter for removing noise components from an input sine wave corresponding to the for each said burst,

a phase detector for detecting a phase difference between input and output signals of the band-pass filter,

a loop filter supplied with the output from the phase detector, and



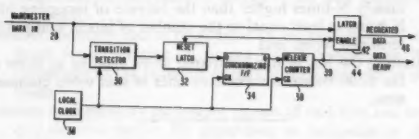
automatic control means for effecting control by the output from the loop filter so that the difference between the frequency of the input sine wave and the center frequency of the band-pass filter approaches zero,

wherein the loop filter comprises a low-pass filter having a charge time constant smaller than the length of each said burst and a discharge time constant larger than the frame period.

4,361,895
MANCHESTER DECODER

Benjamin M. Khoudari, Great Neck, N.Y., assignor to Ontel Corporation, Woodbury, N.Y.

Filed Jul. 28, 1980, Ser. No. 172,742
Int. Cl.³ H04J *3/06;* **H04L** *7/00*
U.S. Cl. 375—87 **5 Claims**



1. A method of decoding Manchester encoded data to recreate an original data stream, said method comprising:

detecting each mid-bit transition in the Manchester encoded data;

commencing at each mid-bit transition time measuring a time interval substantially equal to three-fourths of the data bit interval to determine a sampling point;

sampling the Manchester data at each sampling point; and

causing the logic level of the recreated data stream to be the same as the logic level of the Manchester encoded data at the sampling point.

4,361,896
BINARY DETECTING AND THRESHOLD CIRCUIT

Terry N. Garner, Forest, Va., assignor to General Electric Company, Lynchburg, Va.

Continuation of Ser. No. 75,153, Sep. 12, 1979. This application Aug. 12, 1980, Ser. No. 177,488
Int. Cl.³ H04Q *3/02;* **H03K** *23/00*
U.S. Cl. 375—96 **76 Claims**

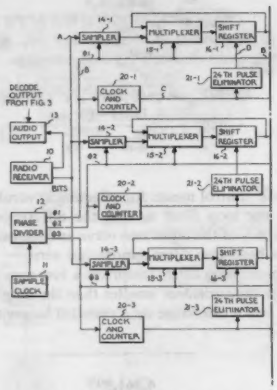
51. A method for detecting a repeating predetermined digital word of binary valued bits within an incoming serial bit stream, said method comprising:

comparing binary-valued signals corresponding to a word-length portion of said incoming bit stream with the bit values of said predetermined word to provide an output

signal in response to a predetermined number of acceptable word comparisons, and

utilizing said output signal to change said predetermined number to a lower value in response to the initial occurrence of said output signal thereby reducing the number of acceptable word comparisons required to maintain said output signal after its initial occurrence.

52. A method for detecting a repeating predetermined digital word of binary-valued bits within an incoming serial bit stream, said method comprising:



comparing binary-valued signals corresponding to a word-length portion of said incoming bit stream with the bit values of said predetermined word and to provide an output signal in response to a predetermined number of acceptable word comprisons,

performing said comparisons at a rate which is approximately N-times higher than the bit-rate of incoming bits, N being at least equal to the number of bits in said predetermined word, and

shifting the bits of one compared word relative to those of the other between successive ones of said word comparisons.

4,361,897

CIRCUIT ARRANGEMENT FOR CLOCK PULSE RECOVERY AT THE RECEIVING END OF DIGITAL CLOCK-CONTROLLED DATA TRANSMISSION SYSTEMS

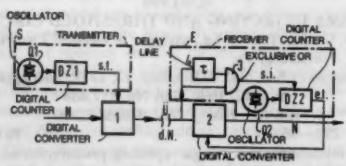
Peter Kloeber, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 14, 1980, Ser. No. 196,531

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1979, 2943865

Int. Cl.³ H04L *7/02*

U.S. Cl. 375—110 **4 Claims**



1. A circuit arrangement for clock pulse recovery in a digital, clock-controlled full duplex data transmission system in which analog information is converted into and transmitted in digital form and then reconverted into analog form, comprising:

first and second transmitting/receiving stations and a transmission medium interconnecting said stations, said first transmitting/receiving station comprising a first transmitter and a first receiver and said second transmitting-/receiving station comprising a second transmitter and a second receiver, said transmission medium comprising a first branch interconnecting said first transmitter and said second receiver and a second branch interconnecting said second transmitter and said first receiver;

each of said transmitting/receiving stations further comprising a quartz-stabilized oscillator operable to produce pulses at a multiple of a desired clock pulse frequency;

each of said transmitters comprising an analog/digital converter including an output connected to the respective transmission medium branch for outgoing transmission, a first input for receiving analog signals for conversion and a second input, and a first counter connected between the respective oscillator and said second input and operable in response to the oscillator pulses to feed clock pulses of the desired clock frequency to said analog/digital converter;

each of said receivers comprising a digital/analog converter including a first input for connection to the respective transmission medium branch for incoming transmission, a second input for receiving recovered clock pulses, and an output for delivering analog signals, an EXCLUSIVE-OR gate including first and second inputs and an output, said first input connected in common with said first input of said digital/analog converter to said transmission medium branch for incoming transmission, a delay circuit connected across said first and second inputs of said EXCLUSIVE-OR gate, a second counter including a first input connected to the respective oscillator, an output connected to said second input of said digital/analog converter and a second input connected to the output of said EXCLUSIVE-OR gate, said second counter being reset upon opening of said EXCLUSIVE-OR gate and operable to recover and feed clock pulses to said digital-/analog converter.

4,361,898

DIGITAL SYNCHRONIZING SYSTEM

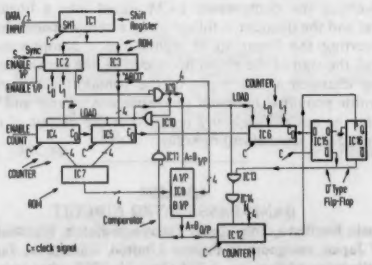
Frank A. Griffiths, Oxhey, and Joseph R. Hankinson, Watford, both of England, assignors to Polygram GmbH, Hamburg, Fed. Rep. of Germany

Filed Jan. 7, 1981, Ser. No. 223,164

Claims priority, application United Kingdom, Jan. 9, 1980, 8000710

Int. Cl.³ H04L *7/08*

U.S. Cl. 375—114 **5 Claims**



4. A synchronizer for the development of a synchronizing signal for a block of information which includes of series of spaced synchronizing control words each of which is a coded representation of an interval between the respective word and a reference position within the block, the synchronizer com-

prising: a clock controlled counter means which counts towards a datum;

means responsive to the attainment of the said datum to produce the synchronizing signal;

a decoder means which responds to the synchronizing control words in accordance with a respective separation of which the decoded synchronizing control word is a representation; a comparator means which compares a decoded synchronizing control word with a concurrent content of the counter means to ascertain the existence of equality;

means effective on the discover of equality to inhibit the setting of the counter means by the decoder means and to permit such resetting in the absence of equality;

means for counting occasions of equality; and means for inhibiting production of the synchronizing signal unless a predetermined number of occasions of equality have been counted.

4,361,899

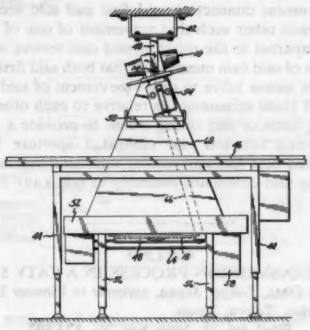
SCANNING X-RAY SYSTEM

Kurt Amplatz, 10 Evergreen Rd., St. Paul, Minn. 55110

Division of Ser. No. 71,184, Aug. 31, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 253,182

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—21 **4 Claims**



1. An x-ray apparatus for producing two-dimensional tomographic x-ray images of points lying in a plane of a desired tomographic cut through an object interposed between a source of x-rays and x-ray sensitive means, and in which the source of x-rays includes an x-ray tube in which an electron stream from a cathode is directed along an anode-cathode axis to strike a focal spot on a target surface of an anode to produce x-rays, the target surface being inclined with respect to a plane which is perpendicular to the anode-cathode axis and which passes through the focal point, the improvement comprising:

pivoting means for pivoting the x-ray tube about a pivot axis which passes exactly through the center of the focal spot, is essentially perpendicular to the anode-cathode axis, and is essentially parallel to a plane defined by the x-ray sensitive means;

means for driving the object in synchronism with the pivoting of the x-ray tube;

means for driving the x-ray sensitive means in synchronism with the pivoting of the tube;

wherein the object and the x-ray sensitive means are driven parallel to one another and in the same direction;

positioning means for positioning the plane defined by the x-ray sensitive means in a position essentially parallel to a desired tomographic cut through the object;

stationary secondary means positioned between the object and the x-ray sensitive means for absorbing secondary radiation scattered from the object;

stationary primary means positioned between the tube and the object; and cooperating with the stationary secondary means in preventing secondary radiation from reaching the x-ray sensitive means;

whereby images of points lying in the plane of the desired tomographic cut through the object are reinforced as the x-ray tube is pivoted and the object and the x-ray sensitive means are moved in synchronism with the pivoting of the tube; and

whereby images of points lying outside of the plane of the desired tomographic cut through the object are blurred.

4,361,900

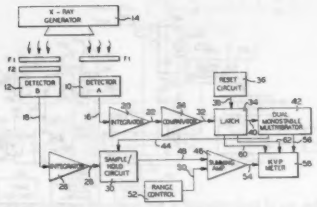
RADIATION MONITORING DEVICE

Melvin P. Siedband, Madison, Wis., assignor to Victoreen, Inc., Cleveland, Ohio

Filed Nov. 20, 1980, Ser. No. 208,549

Int. Cl.³ H05G *1/26*

U.S. Cl. 378—98 **12 Claims**



1. An apparatus for indicating the voltage applied to a means for generating a beam of x-rays, a first portion of the beam passing through a filter means, comprising:

first detector means responsive to the filtered first portion of the beam for generating an output signal representing the magnitude of the radiation energy of the first portion of the beam;

second detector means responsive to the remainder of the beam for generating an output signal representing the magnitude of the radiation energy of the remainder of the beam;

means responsive to the output signals of said first and second detector means for generating an indication of the voltage applied to the means for generating the beam of x-rays, said means including a first integrator means responsive to the output signal of said first detector for generating a first ramp output signal, a second integrator means responsive to the output signal of said second detector for generating a second ramp output signal, and means responsive to the first and second ramp output signals for generating the indication of voltage;

trigger means responsive to the first ramp output signal for generating an enable signal when the magnitude of the first ramp output signal reaches a predetermined reference level; and

means responsive to the second ramp signal and the enable signal for storing a signal representing the magnitude of the second ramp output signal.

4,361,901

MULTIPLE VOLTAGE X-RAY SWITCHING SYSTEM

Herbert E. Daniels, Brown Deer; Frank Bernstein, Milwaukee; Thomas W. Lambert, Dousman, and Norbert J. Pelc, Wauwatosa, all of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 18, 1980, Ser. No. 208,095

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—106 **14 Claims**

1. A system for controlling an x-ray tube to emit alternate low and high photon energy x-ray pulses whose photon energy is determined by the voltage drop across the tube during the

pulse and whose intensity is dependent on the current passing through the tube during respective pulses, comprising:

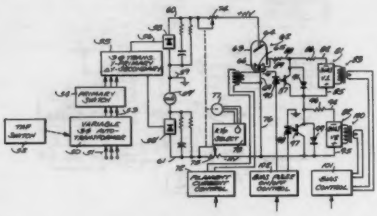
an x-ray tube having an anode, a filament and a control element,

a high voltage dc source and a circuit for coupling the positive output of the source to the anode and the negative output to the filament,

adjustable impedance means in said circuit for inserting a selected amount of impedance in addition to the impedance of the source, the voltage drop developed in said circuit by said adjustable impedance means being a function of the current flowing in the circuit between the anode and filament of the x-ray tube,

at least one dc bias voltage source having a negative output coupled to said x-ray tube control element and a positive output coupled to said x-ray tube filament,

a shunting circuit including semiconductor switch means connected between the negative and positive outputs of said bias voltage source and between said control element



of the x-ray tube, said switch means having a control element, and

means for applying signals to the control element of the switch means for altering the conductivity of said switch means periodically for said switch means to shunt substantially all or portions of said bias voltage from the control element of the x-ray tube and thereby produce corresponding voltage drops and currents in said x-ray tube,

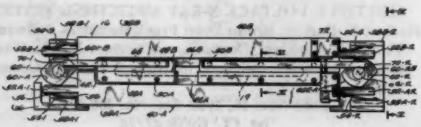
shunting all or a major portion of the negative bias voltage from the control element of the x-ray tube causing said tube to conduct high current and said impedance means to develop a higher voltage drop such that there is a correspondingly lower voltage drop between the x-ray tube anode and filament, and

shunting a lesser portion of the negative bias voltage from the control element of the x-ray tube causing the tube to conduct low current and said impedance means to develop a lower voltage drop such that there is a correspondingly higher voltage drop between the x-ray tube anode and filament.

4,361,902

COLLIMATOR FOR X-RAY DIAGNOSTIC APPARATUS

Richard T. Brandt, New Berlin, and Robert B. Hauck, Delafield, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

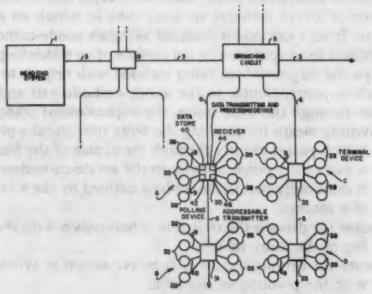
Filed Jul. 7, 1980, Ser. No. 166,483
Int. Cl.³ G03B 41/16
U.S. Cl. 378—152 **9 Claims**

1. A collimator assembly for defining an elongated aperture for the passage of a diagnostic x-ray beam in an x-ray diagnostic apparatus, said assembly comprising a framework, said assembly comprising a first and a second blade subassembly mounted on said framework, each of said first and said second blade subassemblies respectively comprising a corresponding elongated aperture bounding means cooperating with and in confronting relation to the elongated aperture bounding means of the other of said blade subassemblies, said elongated aperture bounding means of said first and said second blade subassemblies lying in a common plane which is in the projected path of x-rays which the x-ray tube is adapted to emanate, spring means operatively associated with said subassemblies and with said framework, said spring means biasing said first and said second blade subassemblies to a position in which said elongated aperture bounding means of said respective subassemblies are in mutually abutting relation to define a zero aperture condition for the non-passage of a diagnostic x-ray beam through said collimator assembly to the patient, each of said blade subassemblies comprising a first and a second cam follower means at the respective opposite ends thereof, said assembly comprising a first cam means mounted on said framework and interposed between the respective first cam follower means of both of said blade subassemblies and contiguous one end of said blade subassemblies, and a second cam means mounted on said framework and interposed between the respective second cam follower means of both of said blade subassemblies and at the opposite end of said blade subassemblies, link means connecting said first and said second cam means to each other such that movement of one of said cam means is imparted to the other of said cam means, means for driving one of said cam means such that both said first and said second cam means move to cause movement of said first and said second blade subassemblies relative to each other against the biasing force of said spring means to provide a predetermined spacing between said elongated aperture bounding means of said first and said second subassemblies, and means for securing said collimator assembly to said x-ray diagnostic apparatus.

4,361,903

DATA TRANSMISSION PROCESS IN A CATV SYSTEM

Yoshitsugu Ohta, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 30, 1980, Ser. No. 173,597
Claims priority, application Japan, Aug. 16, 1979, 54-104450
Int. Cl.³ H04N 7/18
U.S. Cl. 455—2 **2 Claims**



1. The method of interrogating terminal devices by a head end in a cable television system comprising the steps of:

addressably interrogating a set of addressable terminal devices at each of a plurality of addressable data transmitting and processing devices, each addressable terminal device being coupled to an associated data transmitting and processing device by a conductor, receiving a plurality of selectable television signals over the conductor, receiving

interrogation signals over the conductor, and transmitting terminal information over the conductor in response to an interrogation signal containing an address of said addressable terminal device,

receiving and storing at each addressable data transmitting and processing device, terminal data transmitted by each addressable terminal device coupled thereto over the conductor device in response to an interrogation;

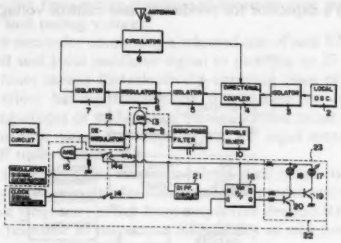
addressably interrogating each addressable data transmitting and processing device at a head end, each addressable data transmitting and processing device being coupled to the head end by a conductor and transmitting over the conductor in response to a single addressable interrogation containing a respective address thereof stored terminal data for each addressable terminal device associated therewith.

4,361,904

METHOD OF TESTING TRANSCEIVER AND TRANSCEIVER INCLUDING TESTING APPARATUS

Akira Matsumura, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Jul. 17, 1980, Ser. No. 170,046
Claims priority, application Japan, Jul. 31, 1979, 54-97822
Int. Cl.³ H04B *17/00*
U.S. Cl. 455—67 **17 Claims**



10. A method of testing a transceiver without employing auxiliary transmitter circuitry, the transceiver, during normal, non-testing operation, deriving a carrier and transmitting a modulated carrier and mixing a received carrier, a portion of the energy of the transmitted modulated carrier being reflected back to a receiver segment of the transceiver, the testing method comprising suddenly increasing and decreasing the amount of modulation of the transmitted carrier, the carrier energy reflected back to the receiver being modified to include the sudden increases and decreases in the amount of modulation of the transmitted carrier, the mixing of the reflected received carrier energy including the sudden increases and decreases and resulting in a pulse each time the amount of modulation is increased and decreased, detecting the pulses, activating a first indicator for signalling that the transceiver is operating normally in response to the derivation of the detected pulse, and activating a second indicator for signalling that the transceiver is not operating normally in response to no detected pulse being derived during testing.

4,361,905

ARRANGEMENT FOR CONNECTING SELECTED ANTENNAS TO A RADIO FOR TRANSMITTING AND RECEIVING

Ralph Etherington, and Joe B. Linker, Jr., both of Lynchburg, Va., assignors to General Electric Company, Lynchburg, Va.

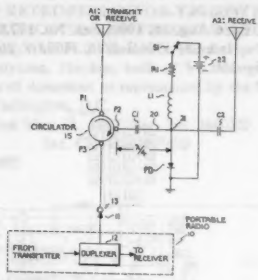
Filed Nov. 10, 1980, Ser. No. 205,268
Int. Cl.³ H04B *1/38*
U.S. Cl. 455—80 **8 Claims**

1. An improved arrangement for selectively coupling first and second antenna terminals to a single radio terminal, comprising:

a. a circulator having first, second, and third terminals and arranged so that energy applied to said first terminal becomes available at said second terminal, that energy applied to said second terminal becomes available at said third terminal, and that energy applied to said third terminal becomes available at said first terminal;

b. means coupling said first circulator terminal to said first antenna terminal;

c. means coupling said third circulator terminal to said radio terminal;



d. a transmission line having a length that is an odd multiple, including unity, of a quarter wavelength at a selected radio frequency;

e. means coupling a first end of said transmission line to said second circulator terminal;

f. means coupled to a second end of said transmission line for selectively applying a very low or very high impedance thereto;

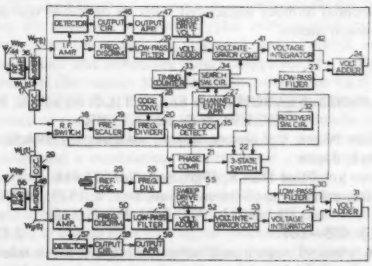
g. and means coupling said second end of said transmission line to said second antenna terminal.

4,361,906

CHANNEL SELECTOR HAVING A PLURALITY OF TUNING SYSTEMS

Yoichi Sakamoto, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 7, 1980, Ser. No. 111,477
Claims priority, application Japan, Jan. 10, 1979, 54-1591
Int. Cl.³ H03L *7/22*; H04B *1/26*
U.S. Cl. 455—140 **9 Claims**



1. A channel selector for controlling the tuning frequency of a plurality of receivers capable of simultaneously performing receiving operations, each of said plurality of receivers having a portion of a phase-locked loop frequency synthesizer; wherein another portion of a phase-locked loop frequency synthesizer is commonly used by said portions of said synthe-

sizers whereby each of said plurality of receivers has an equivalent complete phase-locked loop frequency synthesizer;

and wherein each of said plurality of receivers has its own low pass filter included in its equivalent phase-locked loop frequency synthesizer, and an output of a phase comparator is switched to an input terminal of one low pass filter from among said plurality of low pass filters by a 3-state switching circuit.

4,361,907

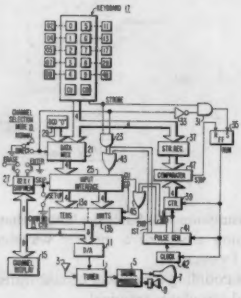
DIRECT ACCESS CHANNEL SELECTION APPARATUS FOR A DIGITAL TUNING SYSTEM

Charles M. Wine, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 14, 1980, Ser. No. 177,914

Int. Cl.³ H04B *1/16;* H03J *7/20*

U.S. Cl. 455—160 **11 Claims**



1. In a receiver, channel selection apparatus comprising:

channel number register means for generating, in binary form, channel numbers of respective channels in a range of channels;

scanning control means for selectively causing said channel number register to generate the channel number next in a predetermined order after a presently generated channel number when activated;

a plurality of switch means each for generating, in coded form, a respective decimal number when operated;

skip means for activating said scanning control when the presently generated channel number corresponds to a channel not in a group of preselected channels; and

direct channel selection means responsive to the operation of one of said switch means for successively activating said scanning control means a number of times related to the decimal number associated with an operated one of said switch means.

4,361,908

CHANNEL SEARCH AND SELECTION SYSTEM FOR TELEVISION RECEIVER

Hirohide Niimi, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 8, 1980, Ser. No. 214,414

Claims priority, application Japan, Dec. 6, 1979, 54/157402

Int. Cl.³ H03J *7/02, 7/22;* H04N *5/50*

U.S. Cl. 455—164 **2 Claims**

1. A channel search and selection system for a television receiver comprising:

(1) a channel selection voltage generator circuit for producing a continuously changing control voltage;

(2) an electronic tuner for receiving said control voltage produced from said channel selection voltage generator circuit to receive a television signal of a channel corresponding to said control voltage and converting said television signal to an intermediate frequency signal;

(3) an amplifier for receiving and amplifying said intermediate frequency signal produced from said electronic tuner;

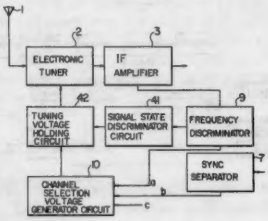
(4) a frequency discriminator for receiving said amplified intermediate frequency signal from said amplifier and producing an output voltage according to the degree of deviation of the frequency of said intermediate frequency signal from a predetermined frequency, said output voltage being fed to said channel selection voltage generator circuit for controlling said control voltage produced therefrom;

(5) a television signal state discriminator circuit for indirectly detecting the state of the television signal being received by said electronic tuner, said television signal state discriminator circuit receiving the output signal from said frequency discriminator and producing an output signal when the output of the frequency discriminator reaches a predetermined voltage; and

(6) voltage holding means connected to said channel selection voltage generator circuit, said voltage holding means receiving the output signal from said television signal state discriminator circuit and preventing variations of said control voltage supplied from said channel selection voltage generator circuit to said electronic tuner during the presence of the output signal from said television signal state discriminator circuit, wherein

(1) said channel selection voltage generator circuit includes:

(a) a capacitor for producing said control voltage;



(b) a first constant current circuit for supplying a first constant current to said capacitor;

(c) a second constant current circuit connected to said capacitor for causing a second constant current less than said first constant current to flow to discharge said capacitor; and

(d) a control circuit for detecting the level of the output voltage fed from said frequency discriminator and rendering said first constant current circuit conductive or non-conductive by producing a first detection signal when said output voltage is higher than a predetermined first voltage and producing a second detection signal when said output voltage is lower than said first voltage; and wherein

(2) said voltage holding means includes:

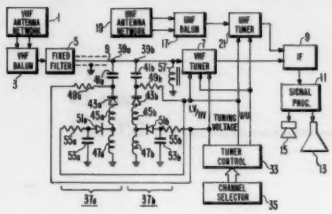
(a) a third constant current circuit connected to said capacitor in said channel selection voltage generator circuit for causing a third current equal to the difference between said first constant current from said first constant current circuit and said second constant current from said second constant current circuit to flow; and

(b) means for rendering said first and third constant current circuits conductive when said television signal state discriminator circuit produces the output signal and rendering said third constant current circuit non-conductive when said output signal vanishes.

4,361,909
PRE-TUNER TRACKING TRAPS RESPONSIVE TO A TUNING VOLTAGE

Gerald E. Theriault, Hopewell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 30, 1980, Ser. No. 154,834
Int. Cl.³ H04B 1/26
U.S. Cl. 455—286 **10 Claims**



1. In a receiver, apparatus comprising:

RF input means for supplying RF carriers;

tuning control means for generating a tuning voltage having magnitudes corresponding to respective selected channels;

local oscillator means for generating a local oscillator signal having frequencies determined by respective magnitudes of said tuning voltage;

mixer means for combining a selected one of said RF carriers and said local oscillator signal to produce an IF signal;

RF tuner means for selectively applying ones of said RF carriers having frequencies determined by respective magnitudes of said tuning voltage to said mixer means;

connection means for coupling said RF input means to said RF tuner means; and

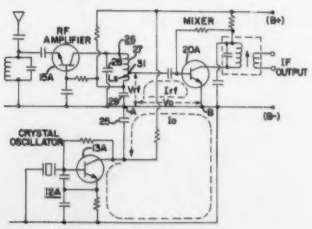
first signal rejection means coupled to said connection means for attenuating undesired signals at a predetermined negative frequency offset from respective desired RF carriers in response to respective magnitudes of said tuning voltage; and

second signal rejection means connected to said connection means for attenuating undesired signals at a predetermined positive frequency offset from respective desired RF carriers in response to respective magnitudes of said tuning voltage.

4,361,910
GROUND LOOP INJECTION VHF TUNER

Howard S. Teller, Jr., c/o Robert E. Browne, Ste. 4410, 135 S. LaSalle St., Chicago, Ill. 60603

Filed Jun. 15, 1981, Ser. No. 273,481
Int. Cl.³ H04B 1/26
U.S. Cl. 455—320 **6 Claims**

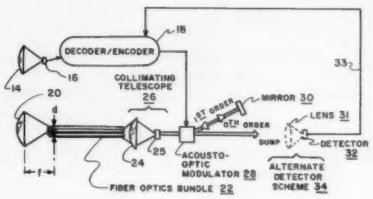


1. An improved circuit for providing a predetermined harmonic injection current derived from an oscillator frequency signal to an RF frequency mixer and for suppressing all other harmonics, wherein said mixer receives said predetermined harmonic and an RF signal as outputs of a tuned circuit including an inductance and capacitance, said improved circuit comprising an oscillator providing a harmonic-rich signal current including a predetermined harmonic for injecting into said mixer, which predetermined harmonic is relatively close in frequency to the input RF frequency, and a first capacitor and a portion of the inductance of said tuned circuit connected as a series circuit coupled to said oscillator and having a low series impedance for the predetermined harmonic injection current and a high series impedance to other harmonics.

4,361,911
LASER RETROREFLECTOR SYSTEM FOR IDENTIFICATION OF FRIEND OR FOE

Rudolph G. Buser, Wall, N.J.; Robert S. Rohde, Springfield, and Neal T. Nomiyama, Herdon, both of Va., assignors to The United States of American as represented by the Secretary of the Army, Washington, D.C.

Filed May 21, 1981, Ser. No. 266,025
Int. Cl.³ H04B 9/00
U.S. Cl. 455—605 **21 Claims**



1. A covert laser retroreflector system for cooperative battlefield friend-or-foe target identification, said system comprising:

a laser interrogator with clocked transmitter and dedicated large aperture receiver portions therein wherein said transmitter portion transmits an encoded cryptic interrogation message on a first laser pulse toward a target followed by a precisely timed clocked unmodulated second laser pulse and wherein said receiver portion receives a retroreflected reply signal from a friendly target; and

a laser retroreflector receiver/transponder positioned on said friendly target for receiving said first and second laser pulses therein clocked in synchronism with said clocked transmitter and receiver portions in said interrogator, said laser retroreflector receiver/transponder comprised of detector lens and a detecting means for detecting said first and second laser pulses and a decoder/encoder for decoding the detected encoded cryptic interrogation message first laser pulse and the detected unmodulated second laser pulse and collecting optics comprised of a collecting lens and fiber optics bundle with its input at the focal point of the collecting lens and a collimating telescope comprised of converging lens at the fiber optics bundle output and diverging lens for collecting said first and second laser pulses and a modulating retroreflector positioned on the optical axis of said collecting optics for receiving said first and second laser pulses from said diverging lens wherein said modulating retroreflector is in the off state until modulated in the on state by a signal processor in said decoder-/encoder wherein said modulating retroreflector is modulated only during the time that said unmodulated second laser pulse is received and only when a correctly encoded cryptic interrogation message in said first laser pulse is detected by said detecting means and is decoded by said decoder/encoder for activating the signal processor in said decoder/encoder clocked in synchronism with said unmodulated second laser pulse wherein said modulating retroreflector modulates the unmodulated second laser

pulse in near real time to produce a retroreflected modulated reply signal with the proper preassigned code therein which is encoded by said decoder/encoder and is retroreflected back along the optical axis of said collecting optics to said dedicated receiver of said laser interrogator which is optically aligned with said modulated reply signal for decoding therein to determine friend-or-foe target identification.

DESIGN PATENTS

GRANTED NOV. 30, 1982

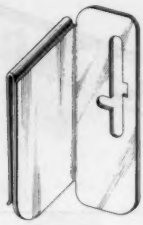
ERRATA

For CLASS	See PATENT NO.
D23–138	267,074

DESIGNS

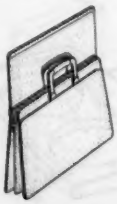
NOVEMBER 30, 1982

267,050
BELT-CLIP CAMERA HOLDER
James G. Ostrom, 837 Locust St., Denver, Colo. 80220
Filed Sep. 8, 1980, Ser. No. 185,147
Term of patent 3½ years
Int. Cl. D2—*07*
U.S. Cl. D2—400

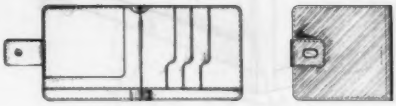


267,051
TOTE BAG
Daniel Tucker, P.O. Box 99, Paget, Bermuda
Filed Sep. 6, 1979, Ser. No. 73,124
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—44

267,052
PORTFOLIO
George Rapoport, 5101 Pacific Blvd., Los Angeles, Calif. 90069
Filed Mar. 28, 1980, Ser. No. 134,957
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—52

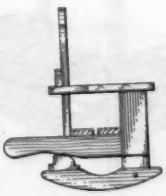


267,053
BILLFOLD
Norbert H. J. Linke, Milan, Italy, assignor to S. T. DuPont, Paris, France
Filed Oct. 4, 1979, Ser. No. 81,970
Claims priority, application France, Apr. 4, 1979, 42352
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—58

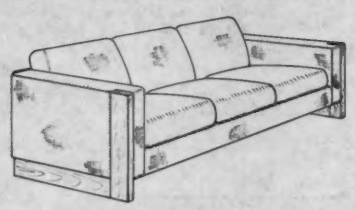


267,054
PAINT ROLLER
Kiyoshi Hori, Osaka, Japan, assignor to Nippon Paint Co., Ltd., Osaka, Japan
Filed Jun. 19, 1981, Ser. No. 275,227
Claims priority, application Japan, Dec. 19, 1980, 55-53454
Term of patent 14 years
Int. Cl. D4—*04;* D8—*05*
U.S. Cl. D4—38.1

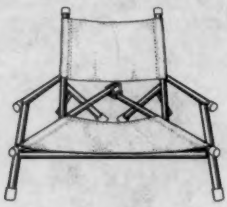
267,055
CHILD'S ROCKER
William W. Cubbage, Jr., Box 4, University Cir., Lincoln University, Pa. 19352
Filed Oct. 20, 1980, Ser. No. 199,062
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—10



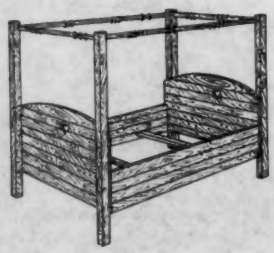
267,056
SOFA
Carlos L. Lopez-Benitez, Jamestown, N.C., assignor to Monarch Furniture Corp., High Point, N.C.
Filed Jun. 2, 1980, Ser. No. 155,856
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



267,057
CHAIR
Ronald E. Koehm, 27703 Ortega Hwy., San Juan Capistrano, Calif. 92675
Filed Jul. 22, 1980, Ser. No. 171,209
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67

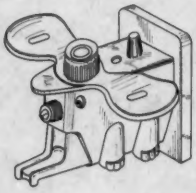


267,058
FRAME FOR BED WITH TESTER
Jean C. Maugirard, 8, Allee de la Marelle, 91350 Grigny, France
Filed Jul. 24, 1979, Ser. No. 60,152
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—83

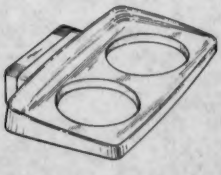


267,059
BATHROOM SHELF
Bruce R. Thompson, 32 Shakespeare Ave., Tranmere, South Australia, Australia
Filed Feb. 13, 1980, Ser. No. 121,243
Term of patent 14 years
Int. Cl. D23—*02*; D6—*04*
U.S. Cl. D6—86

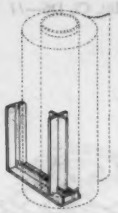
267,060
COMBINED TOOTHPASTE DISPENSER AND TOOTHBRUSH HOLDER
Masahiro Iwamoto, 358, Hiraoka-cho, Sakai-shi, Osaka-fu, Japan
Filed Feb. 4, 1980, Ser. No. 118,221
Term of patent 14 years
Int. Cl. D23—*02*; D21—*01*
U.S. Cl. D6—87



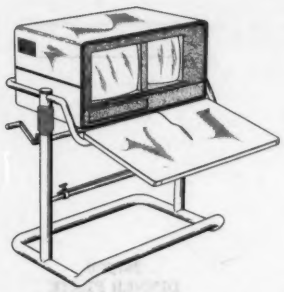
267,061
TUMBLER HOLDER
Bruce R. Thompson, 32 Shakespeare Ave., Tranmere, South Australia, Australia
Filed Feb. 13, 1980, Ser. No. 121,247
Term of patent 14 years
Int. Cl. D23—*02*; D6—*04*
U.S. Cl. D6—93



267,062
TOWEL ROLL HOLDER
John A. Lentz, 11 Holland Dr., Middletown, N.J. 07748
Filed Jun. 30, 1980, Ser. No. 164,790
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—97

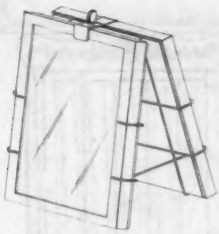


267,063
DRAWING TABLE
George A. Wilson, Portola Valley, Calif., assignor to Ampex Corporation, Redwood City, Calif.
Filed Apr. 11, 1980, Ser. No. 139,383
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—156

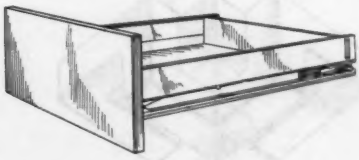


267,064
VERTICAL CABINET
Bruce R. Thompson, Tranmere, Australia, assignor to UPL Group Limited, Brisbane, Australia
Filed Feb. 13, 1980, Ser. No. 121,244
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—167

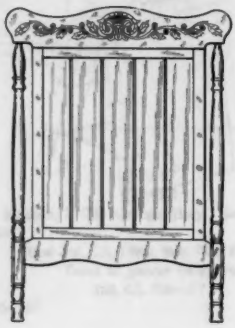
267,065
DUAL COMPARTMENT DISPLAY CASE OR SIMILAR ARTICLE
Keith W. Gray, P.O. Box 60248, Sunnyvale, Calif. 94088
Filed Feb. 14, 1980, Ser. No. 121,584
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—173



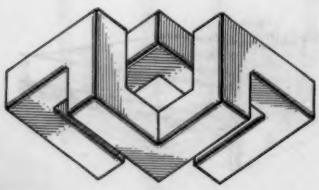
267,066
DRAWER
Erich Röck, and Josef Brunner, both of Höchst, Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria
Filed Jun. 6, 1980, Ser. No. 157,111
Claims priority, application United Kingdom, Dec. 12, 1979, 992 706
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



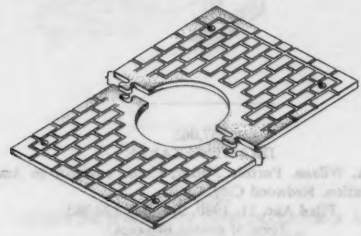
267,067
CRIB HEADBOARD
Henry W. Mower, Stevens Point, Wis.; Allen Seymour, Clayton, Ohio; Jerome P. Koziatek, Hinckley, Ohio, and Joseph G. Lendvay, Ravenna, Ohio, assignors to Questor Corporation, Toledo, Ohio
Filed Oct. 16, 1980, Ser. No. 197,488
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



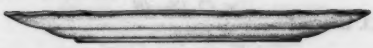
267,068
TABLE BASE
Lawrence F. Caulkett, 2206 Oak St., #E, Santa Monica, Calif. 90405
Filed Dec. 21, 1979, Ser. No. 106,089
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—196



267,069
DRILLING RIG ROTARY TABLE ANTI-SKID SAFETY PAD OR SIMILAR ARTICLE
Choice R. Kinchen, Friendswood, and Roy D. Phillips, Edgewood, both of Tex., assignors to Custom Safety Products, Friendswood, Tex.
Filed Apr. 7, 1980, Ser. No. 137,615
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—210

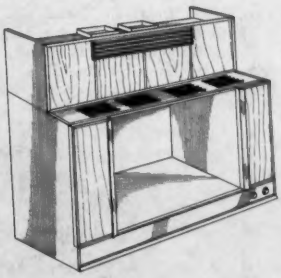


267,070
DINNER PLATE
Alfred Blake, Hillsdale, N.J., assignor to American Commercial Incorporated, Gardena, Calif.
Filed May 30, 1980, Ser. No. 154,752
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—30



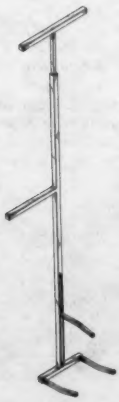
267,071
COVERED CANISTER
Arthur R. Carlson, East Malvern, Australia, assignor to Brian Davis and Company Proprietary Limited, Victoria, Australia
Filed Jun. 5, 1980, Ser. No. 156,556
Term of patent 14 years
Int. Cl. D07—*07, 01*
U.S. Cl. D7—79

267,072
HOOD AND RACK ASSEMBLY
Stanley M. Joseph, Glendale, Calif., assignor to Distinctive Appliances, Inc., Pasadena, Calif.
Filed Mar. 17, 1980, Ser. No. 130,737
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D23—151



267,073
HANDLE FOR A LID OF COOKING VESSELS
Jean-Pierre Lefevre, Annecy, France, assignor to Tefal S.A., Rumilly, France
Filed Jul. 31, 1980, Ser. No. 174,261
Claims priority, application France, Feb. 7, 1980, 800253
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—393

267,074
LOG LIFTER
James M. Feighery, 716 Mt. Sinai Rd. South, Dalton, Ga. 30720
Filed Feb. 5, 1980, Ser. No. 118,845
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D23—138.2

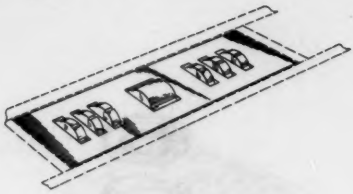


267,075
FILE HANDLE
Per Wadström, Enköping, Sweden, assignor to KaBe Produkter, Enköping, Sweden
Filed Jul. 10, 1979, Ser. No. 56,301
Claims priority, application Sweden, Mar. 7, 1979, 790595
Term of patent 14 years
Int. Cl. D8—*00*
U.S. Cl. D8—300

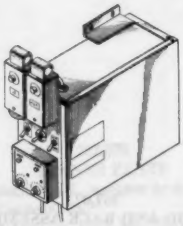
267,076
JAR OR THE LIKE
Sheldon H. Hurtig, Evanston, Ill., assignor to Kraft, Inc., Glenview, Ill.
Filed Oct. 14, 1980, Ser. No. 196,675
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—370

267,077
WRIST WATCH
Harumichi Kabaya, Tokyo, Japan, assignor to Citizen Watch Company, Ltd., Tokyo, Japan
Filed Dec. 5, 1980, Ser. No. 213,506
Claims priority, application Japan, Jul. 21, 1980, 55-29414
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—32

267,078
SCORING DIALS FOR BACKGAMMON GAME
Abraham I. Tawil, Brooklyn, N.Y., assignor to H.I.T. Industries, Ltd., Avenel, N.J.
Filed Apr. 30, 1979, Ser. No. 34,477
Term of patent 14 years
Int. Cl. D10—*99*
U.S. Cl. D10—46.1



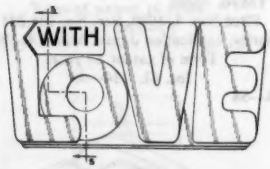
267,079
DUAL THERMOSTAT TEMPERATURE AND TIME CIRCUIT CONTROL ASSEMBLY
William H. Johnson, Harrisonburg, Va., assignor to Shenandoah Manufacturing Co. Inc., Harrisonburg, Va.
Filed May 27, 1980, Ser. No. 153,728
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—50

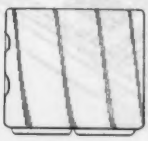


267,080
BADGE
Maurice Past, R.R. 2, Dubuisson, Canada (J9P 4N7)
Filed Jan. 22, 1981, Ser. No. 227,508
Term of patent 14 years
Int. Cl. D11—*03*
U.S. Cl. D11—107

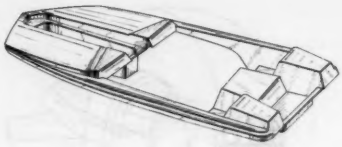
267,081
BUD VASE
Billie L. McCoy, Zanesville, Ohio, assignor to Nelson McCoy Pottery Company, Roseville, Ohio
Filed Jul. 14, 1980, Ser. No. 168,029
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—149

267,082
PLANTER BOWL
Billie L. McCoy, Zanesville, Ohio, assignor to Nelson McCoy Pottery Company, Roseville, Ohio
Filed Jul. 14, 1980, Ser. No. 168,593
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—149

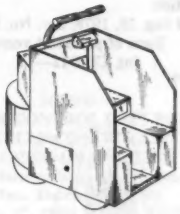




267,083
COMBINED BOAT DECK AND SKI STORAGE WELL
Charles B. Bonifield, Rte. 2, Warsaw, Ind. 46580
Filed Oct. 11, 1977, Ser. No. 841,026
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—318

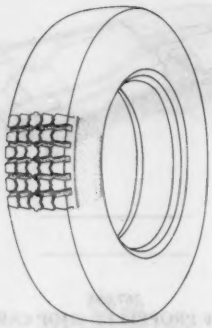


267,084
SELF PROPELLED SHOP CART
Daryl E. Bittinger, 507 N. 12th St., Norfolk, Nebr. 68701
Filed Jun. 19, 1980, Ser. No. 161,132
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D12—85

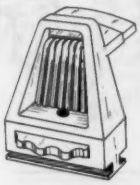


267,085
MOTORCYCLE CRUISE CONTROL
Cecil M. Kiser, Jr., Newkirk, Okla., assignor to Nep Sales, Inc., Glendale, Calif.
Filed Feb. 2, 1979, Ser. No. 8,978
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—174

267,086
TIRE
Philip S. Hammond, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 29, 1980, Ser. No. 182,557
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147

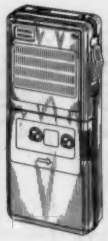


267,087
TIE DOWN BRACKET FOR A LUGGAGE RACK
Charles E. Ingram, Warren, Mich., assignor to Four Star Corporation, Troy, Mich.
Filed Sep. 25, 1978, Ser. No. 945,256
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—157

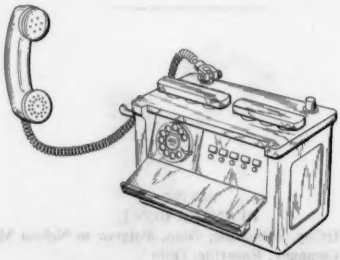


267,088
ELECTRICAL CONNECTOR CASING
Per Dahlberg, Saltjö-Boo, Sweden, assignor to Per Dahlberg Elektronik AB, Saltjö-Boo, Sweden
Filed Sep. 19, 1980, Ser. No. 188,957
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24

267,089
DICTATING MACHINE
Peter J. Doodson, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jun. 18, 1980, Ser. No. 160,774
Claims priority, application Benelux, Dec. 21, 1979, 54315-00
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—3

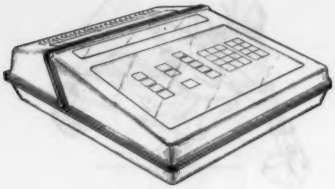


267,090
TELEPHONE
Wesley L. Thomas, 109 S. Catalina St., Los Angeles, Calif. 90004
Filed Jul. 23, 1979, Ser. No. 59,571
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



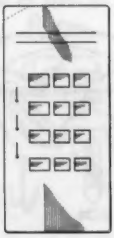
267,091
TELEPHONE SET
Toshiro Ohno, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Sep. 4, 1980, Ser. No. 184,221
Claims priority, application Japan, Mar. 14, 1980, 55-9699
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—58

267,092
MODULAR COMPUTER SYSTEM CONSOLE
George E. Chadima, Jr., Cedar Rapids, Iowa, assignor to Norand Corporation, Cedar Rapids, Iowa
Filed Nov. 5, 1979, Ser. No. 91,186
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—102

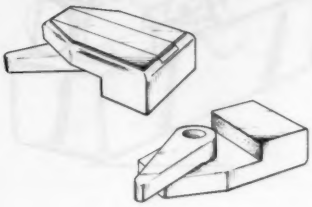


267,093
TELLER MACHINE
Yoshiaki Kobayashi, and Shigeaki Hayashi, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Nov. 30, 1979, Ser. No. 98,873
Claims priority, application Japan, Jun. 5, 1979, 54-080895
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—106

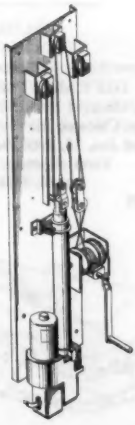
267,094
MAGNETIC CARD FOR MICROWAVE OVEN
Keiichiro Doi, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Oct. 11, 1979, Ser. No. 83,959
Claims priority, application Japan, Apr. 12, 1979, 54-15215
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—117



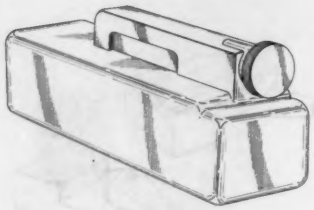
267,095
SAW FENCESTOP
Richard L. Cook, 226 Las Mananitas, Santa Fe, N. Mex. 87501
Filed Jun. 3, 1980, Ser. No. 156,085
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—140



267,096
POWER CONTROL UNIT FOR ENVIRONMENTALLY-CONTROLLED POULTRY BUILDINGS OR THE LIKE
William H. Johnson, Harrisonburg, Va., assignor to Shenandoah Manufacturing Co. Inc., Harrisonburg, Va.
Filed May 27, 1980, Ser. No. 153,730
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—148



267,097
TONER BOTTLE
Thomas A. Tacklind, San Jose, and John L. McChesney, Cupertino, both of Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Jun. 30, 1980, Ser. No. 164,750
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D16—32

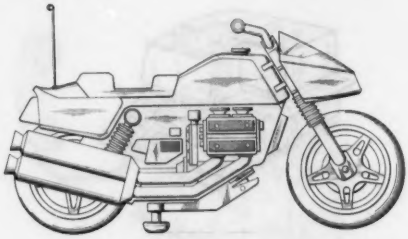


267,098
LUG RECEIVER FOR A DRUM
Ralph W. Packer, 1066 Mobile St., Aurora, Colo. 80011
Filed Jun. 12, 1980, Ser. No. 158,722
Term of patent 14 years
Int. Cl. D17—*04*
U.S. Cl. D17—22

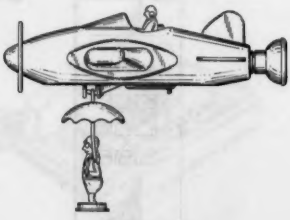
267,099
TOY CARRYING BASKET
Gloria Caranica, Orchard Park, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 15, 1980, Ser. No. 112,396
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—59

267,100
TOY EXCAVATOR
Ingvar Magnusson, 33709 Fifth Ave., Mission, British Columbia, Canada (V2V 1X1)
Filed Nov. 28, 1980, Ser. No. 211,527
Claims priority, application Canada, Jun. 10, 1980, 10-06801
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—79

267,101
TOY MOTORCYCLE
Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91345, and Delmar K. Everitt, Woodland Hills, Calif., assignors to Adolph E. Goldfarb, Tarzana, Calif.
Filed Feb. 13, 1980, Ser. No. 121,125
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—81



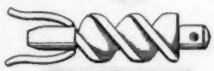
267,102
COMBINED AIRPLANE AND PARACHUTE TOY
Alan M. Steinberg, Rockland, N.Y., assignor to Gordy International, Inc., New York, N.Y.
Filed Jan. 5, 1981, Ser. No. 222,914
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—87



267,103
TOY MANATEE
Joyce Kenrick, 7950 Estero Blvd., Fort Myers Beach, Fla. 33931
Filed Oct. 20, 1980, Ser. No. 198,642
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D21—157

267,104
KNIFE
Robert W. Loveless, Riverside, Calif., assignor to Gerber Legendary Blades, Portland, Oreg.
Filed Dec. 16, 1980, Ser. No. 216,984
Term of patent 14 years
Int. Cl. D22—*02*
U.S. Cl. D22—1

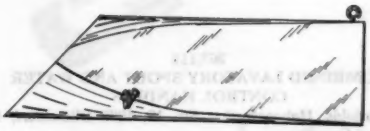
267,105
FISHING LURE
Lewis Stephan, 1568 N. Dixie, Troy, Ohio 45373
Filed Nov. 28, 1980, Ser. No. 211,365
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



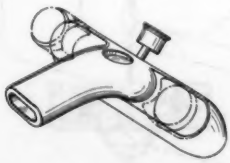
267,106
FISHING LURE
Christian O. Erb, Rte. #3, Streator, Ill. 61364
Filed Sep. 2, 1980, Ser. No. 183,158
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—28

267,107
FISHING LURE
Christian O. Erb, Rte. #3, Streator, Ill. 61364
Filed Sep. 2, 1980, Ser. No. 183,159
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—28

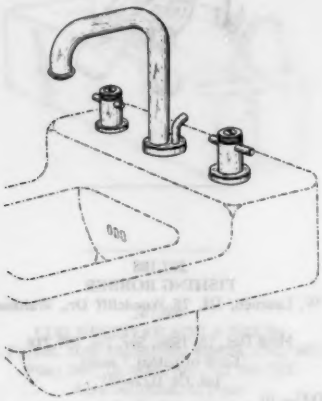
267,108
FISHING BOBBER
Addison W. Learned, III, 75 Woodcliff Dr., Waltham, Mass. 02154
Filed Oct. 15, 1980, Ser. No. 197,218
Term of patent 7 years
Int. Cl. D22—*05*
U.S. Cl. D22—30



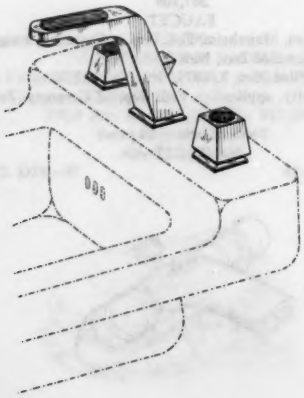
267,109
FAUCET
Wolfgang Fabian, Mannheim, Fed. Rep. of Germany, assignor to American Standard Inc., New York, N.Y.
Filed Nov. 9, 1979, Ser. No. 92,874
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1979, 79/3
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—25



267,110
COMBINED LAVATORY SPOUT AND WATER CONTROL HANDLES
Gerd Arnolds, Hahnenfurther Str. 19, 4000 Düsseldorf, Fed. Rep. of Germany
Filed Feb. 27, 1981, Ser. No. 238,903
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1980, MR 5028
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—25

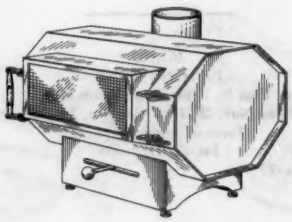


267,111
COMBINED LAVATORY SPOUT AND WATER CONTROL HANDLES
Gerd Arnolds, Hahnenfurther Str. 19, 4000 Düsseldorf, Fed. Rep. of Germany
Filed Feb. 27, 1981, Ser. No. 238,904
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1980, MR 5029
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—25

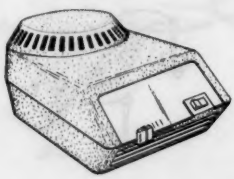


267,112
FRONT FOR FIREPLACE INSERT OR SIMILAR ARTICLE
Richard E. Connelly, Jeromesville, Ohio, assignor to Contractor Equipment Manufacturers, Inc., Ashland, Ohio
Filed Apr. 29, 1980, Ser. No. 144,962
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—93

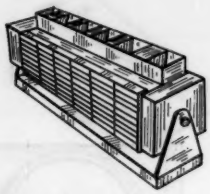
267,113
WOOD BURNING STOVE
George R. Potter, 784 Beaver Creek Rd., Coos Bay, Oreg. 97470
Filed Feb. 9, 1981, Ser. No. 232,437
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



267,114
AIR PURIFIER
Patrick E. Lynch, Jr., and James M. Wimsatt, both of Carson City, Nev., assignors to WLN Products, Reno, Nev.
Filed Jul. 24, 1980, Ser. No. 171,763
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—149

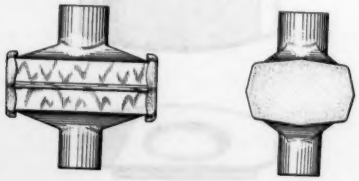


267,115
RECIRCULATION BLOWER
Howard W. Locker, 820 N. Ocean Blvd., Delray Beach, Fla. 33444
Filed Nov. 5, 1979, Ser. No. 91,108
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—151



267,116
PACIFIER
Gediminas J. Bubelis, Reedsburg, Wis., assignor to Gerber Products Company, Fremont, Mich.
Filed Jan. 24, 1980, Ser. No. 114,870
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—46

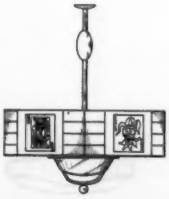
267,117
BREATHING CIRCUIT FILTER
David J. Rosenberg, Glen Cove, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.
Filed Jul. 22, 1980, Ser. No. 171,228
Term of patent 14 years
Int. Cl. D24—*02;* D23—*99*
U.S. Cl. D24—52



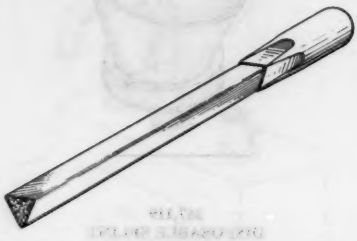
267,118
SPECIMEN FUNNEL
Patricia A. Burnett, 1641 Sherwood Village Cir., Placentia, Calif. 92670
Filed Jul. 28, 1980, Ser. No. 172,857
Term of patent 14 years
Int. Cl. D24—*02;* D7—*99*
U.S. Cl. D24—54

267,119
DISPOSABLE SPLINT
Morton I. Thomas, Nyack, N.Y., assignor to Temco Products, Inc., Passaic, N.J.
Filed Jun. 25, 1980, Ser. No. 162,724
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—64

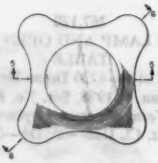
267,120
COMBINATION LAMP AND OPEN TOP STORAGE TABLE
Kemper D. Asbury, Lot 94, 4220 Dolan Dr., Flint, Mich. 48504
Filed Jun. 5, 1978, Ser. No. 915,200
Term of patent 14 years
Int. Cl. D26—*05;* D6—*05*
U.S. Cl. D26—58



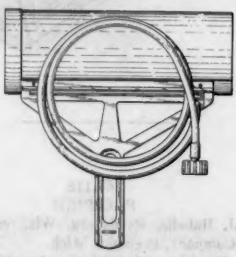
267,121
CIGARETTE
Wan K. Min, Shibum Apt. No. 13-122, 1-45 Yoido-Dong, Yongdongpo-ku, Seoul, Rep. of Korea
Filed Feb. 29, 1980, Ser. No. 125,867
Claims priority, application Rep. of Korea, Sep. 14, 1979, 79-5840; Sep. 14, 1979, 79-5841
Term of patent 14 years
Int. Cl. D27—*01*
U.S. Cl. D27—01



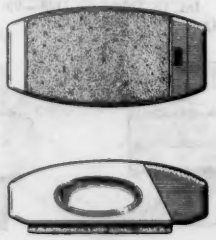
267,122
MEDICINAL TABLET
Janet B. Scotton, Camberley, and Mark R. Hawes, Aldershot, both of England, assignors to Lilly Industries Limited, London, England
Filed Jun. 2, 1980, Ser. No. 155,376
Claims priority, application United Kingdom, Dec. 10, 1979, 992748
Term of patent 14 years
Int. Cl. D28—*01*; D1—*02*
U.S. Cl. D28—02



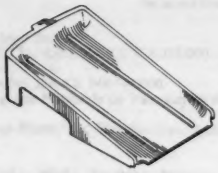
267,123
PAINT ROLLER CLEANER
Walter T. Fuller, 5540 S. Franklin St., Littleton, Colo. 80121
Filed Jun. 23, 1980, Ser. No. 162,495
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—35



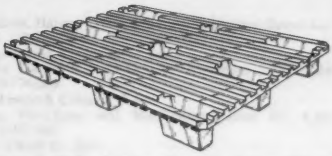
267,124
COMBINED DISPENSER AND APPLICATOR
Albert E. Markarian, 430 Highwood Ave., Leonia, N.J. 07605
Filed Jun. 16, 1980, Ser. No. 159,636
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—45



267,125
DRAIN BOARD
Harold E. Luoma, 125A Rose Lake Rd., Cataldo, Id. 83810
Filed May 5, 1980, Ser. No. 146,629
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—56



267,126
PALLET
Charles K. Jonebrant, Solvarvsplan 10, S-436 00 Askim, Sweden
Filed Jul. 10, 1978, Ser. No. 923,466
Claims priority, application Sweden, Jan. 16, 1978, 780114
Term of patent 14 years
Int. Cl. D9—*08*
U.S. Cl. D34—38



267,127
FULLY AUTOMATED SELF-SERVICE BANKING TERMINAL
Howard S. Noel, Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 13, 1979, Ser. No. 20,127
Term of patent 14 years
Int. Cl. D99—*00*
U.S. Cl. D99—28

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 30TH DAY OF NOVEMBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.H.C. Pharmacal, Inc.: *See*—
Fulton, James E., Jr., 4,361,584, Cl. 424-338.000.

A. Lakin & Sons, Inc.: *See*—
Younger, Gib, 4,361,304, Cl. 248-544.000.

A.N.V.A.R. (de l'Agence Nationale de Valorisation de la Recherche): *See*—
Pommereau, Jean-Pierre; and Hauchecorne, Alain, 4,361,297, Cl. 244-97.000.

Abe, Seiko: *See*—
Igashira, Toshihiko; Ishida, Yasuhiko; Nomura, Ken; and Abe, Seiko, 4,361,125, Cl. 123-549.000.

Aberer, James B.: *See*—
Ostroski, Richard J.; Aberer, James B.; and Best, Gary, 4,360,970, Cl. 30-2.000.

Abrams Fixture Corporation: *See*—
Stoddard, David C. F., 4,361,241, Cl. 211-123.000.

Ackerman, Dean C.; and Hammond, Charles W., to Babcock & Wilcox Company, The. Roller supporting means for long retracting soot blowers. 4,360,945, Cl. 15-316.00R.

Acroform Corporation: *See*—
Miller, Jack V., 4,361,177, Cl. 145-33.00E.

Adams, Lyle G. Automatic fire extinguishing and alarm system for mobile homes. 4,361,189, Cl. 169-14.000.

Adkins, Arlene F. Stove burner apparatus. 4,361,132, Cl. 126-221.000.

Adler, David T. Magnetic pallet. 4,361,822, Cl. 335-303.000.

Advanced Glass Systems Corp.: *See*—
Smith, W. Novis, Jr.; and Bolton, Nelson P., 4,361,433, Cl. 65-116.000.

AGA Aktiebolag: *See*—
Ekstrom, Staffan; and Wettergren, Hans, 4,361,145, Cl. 128-204.260.

Agarwal, Pawan K.; Hughes, Vincent L.; and Lundberg, Robert D., to Exxon Research and Engineering Co. Pressure sensitive adhesive compositions. 4,361,663, Cl. 524-62.000.

Agarwal, Pawan K.; Hughes, Vincent L.; and Lundberg, Robert D., to Exxon Research and Engineering Co. Hot melt adhesive compositions. 4,361,672, Cl. 525-54.500.

Agency of Industrial Science & Technology: *See*—
Honma, Kazuhiro; Shimizu, Kajuro; Nakatani, Tetsu; and Takenaka, Eiichi, 4,361,830, Cl. 340-146.3AC.
Torikai, Eiichi; Kawami, Youji; and Wakabayashi, Noboru, 4,361,602, Cl. 427-123.000.

Agfa-Gevaert Aktiengesellschaft: *See*—
Lessnig, Werner; Metz, Gunter; Spiegel, Willi; Faust, Manfred; and Junkers, Gunter, 4,361,032, Cl. 73-64.400.

Agiman, Jacques. Hydromechanical automatic reversing device for linear hydraulic rams. 4,361,074, Cl. 91-279.000.

Ahmed, Mohamed S.: *See*—
Dobberstein, Robert H.; and Ahmed, Mohamed S., 4,361,097, Cl. 536-128.000.

Aida Engineering Ltd.: *See*—
Toda, Setsuo, 4,361,413, Cl. 414-752.000.

Aigo, Seiichiro. Apparatus for washing semiconductor materials. 4,361,163, Cl. 134-199.000.

Air Products and Chemicals, Inc.: *See*—
Herman, Frederick L.; and Sawicki, John E., 4,361,712, Cl. 568-932.000.
Johnson, David E.; and Toth, Alexander, 4,361,746, Cl. 219-70.000.

Air-Shields, Inc.: *See*—
Grosholz, James R., 4,361,137, Cl. 128-1.00B.

Aisin Seiki Company, Limited: *See*—
Iwasaki, Shinichiro, 4,361,045, Cl. 73-654.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Ishigami, Noriakira; Hasebe, Takahisa; and Kaminishizono, Takeyoshi, 4,360,934, Cl. 4-420.200.
Mori, Kojiro, 4,361,275, Cl. 236-88.000.
Wakamatsu, Fumio, 4,361,352, Cl. 293-120.000.

Ajinomoto Company Incorporated: *See*—
Yasuda, Naohiko; Eguchi, Chikahiko; Okutsu, Masaru; and Hirose, Yoshiteru, 4,361,560, Cl. 424-246.000.

Akishino, Katsuo: *See*—
Hori, Kenji; Kiyota, Yuhiko; and Akishino, Katsuo, 4,361,123, Cl. 123-308.000.

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Aktiebolaget Electrolux: *See*—
Simonsson, Sven B., 4,360,948, Cl. 15-373.000.

Akzona Incorporated: *See*—
Gerlach, Klaus; Mathes, Nikolaus; and Wechs, Friedbert, 4,361,609, Cl. 428-90.000.
Kilsdonk, Harley; Linde, Frits; and Schippers, Petrus L., 4,361,489, Cl. 210-780.000.

Alar Engineering Corporation: *See*—
White, Harold R.; and Doncer, Alexander J., Jr., 4,361,488, Cl. 210-776.000.

Alberta Research Council: *See*—
Chen, Shi-Chow; and MacTaggart, John M., 4,361,702, Cl. 549-373.000.

Albright, David B.: *See*—
Schubert, Keith E.; Albright, David B.; Weimer, Charles M.; and Pollak, Philip, Jr., 4,361,753, Cl. 235-101.000.

Alcan Aluminiumwerk Nurnberg GmbH: *See*—
Wischnack, Wolfram; and Dobner, Alfred, 4,361,181, Cl. 164-522.000.

Aldridge, William R.; and Walmsley, Stanley, to Coal Industry (Patents) Limited. Swivelling arrangements. 4,361,219, Cl. 198-315.000.

Alfelder Maschinen-Und Modell-Fabrik Kunkel, Wagner & Co. K.G.: *See*—
Wedek, Rolf; and Meiritz, Lothar, 4,361,405, Cl. 366-7.000.

Alger, Terry W.: *See*—
Gray, Joe W.; Alger, Terry W.; and Lord, David E., 4,361,400, Cl. 356-23.000.

Alig, Leo; Furst, Andor; Keller, Peter; Muller, Marcel; Kerb, Ulrich; and Wiechert, Rudolf. D-Homosteroids. 4,361,578, Cl. 424-285.000.

Allen, Henry C., to United States of America, Army. Thermoplastic composite rocket propellant. 4,361,526, Cl. 264-3.00C.

Allen, Hugh T.; and Henson, D. Wayne. Dustless ash remover. 4,361,245, Cl. 220-2.000.

Allgood, Richard P., to Monitran International, Inc. Multi-sensor alarm system and method of protecting a premises. 4,361,833, Cl. 340-533.000.

Allied Colloids Limited: *See*—
Clarke, John B.; and Flesher, Peter, 4,361,452, Cl. 156-71.000.

Allis-Chalmers Corporation: *See*—
Loggins, Ted C., Jr.; Selberg, John P.; and Rapmund, Rudolf W., 4,361,406, Cl. 366-25.000.

Almond, David R.; Baggett, David; and Turner, Colin. Collecting accessory for air supported lawn mower. 4,361,001, Cl. 56-12.800.

Aluma Form, Inc.: *See*—
Jarvis, Jack D., 4,360,980, Cl. 37-117.500.

Amerace Corporation: *See*—
Luzzi, Glenn J.; and Cole, James E., Jr., 4,360,967, Cl. 29-758.000.

American Can Company: *See*—
Johnson, Donald O., 4,361,223, Cl. 198-751.000.
Krueger, Duane A.; and Odorzynski, Thomas W., 4,361,628, Cl. 428-475.800.
Langseder, Neal; and Stein, Friedrich, 4,361,251, Cl. 220-269.000.

American Cyanamid Company: *See*—
Huang, Sun Y.; and Giglia, Robert D., 4,361,385, Cl. 350-357.000.
Singh, Balwant; and Henderson, William A., Jr., 4,361,518, Cl. 260-453.00P.

American Hoechst Corporation: *See*—
Mostafa, Mohamed A., 4,361,656, Cl. 521-57.000.

American Home Products Corporation: *See*—
Grant, Norman H.; and Clark, Donald E., 4,361,574, Cl. 424-270.000.
McGregor, William H., 4,361,673, Cl. 525-54.110.

American Standard Inc.: *See*—
Barnes, Laurence A., Jr.; and Irons, Ronald E., 4,361,729, Cl. 179-1.50R.

Ametek, Inc.: *See*—
Bowen, John C., 4,361,134, Cl. 126-417.000.

AMF Incorporated: *See*—
Hou, Kenneth C.; and Webster, Timothy J., 4,361,486, Cl. 210-722.000.
Jenks, Herbert R., deceased; and Jenks, Betty J., executrix, 4,361,533, Cl. 264-258.000.
Williams, Charles N., 4,361,371, Cl. 339-17.00R.

Ammons, Vernon G., to PPG Industries, Inc. Extended pot life polyurethane. 4,361,692, Cl. 528-51.000.

Amorese, Franklyn J.; Piarulli, Vincent J.; and Chapman, James W., to Pfaudler Co. Inc., The. Compression sealed composite seal seat with cooling passages. 4,361,334, Cl. 277-16.000.

Amplatz, Kurt. Scanning x-ray system. 4,361,899, Cl. 378-21.000.

Amtel Systems Corp.: *See*—
Drabing, Richard B.; and Duvall, William S., 4,361,726, Cl. 178-23.00R.

Anastasio, Frank W. Blood sampling unit. 4,361,155, Cl. 128-763.000.

Anchor Hocking Corporation: *See*—
Travis, Jack R., 4,361,226, Cl. 206-45.310.

Anderson, Elmer L.; Goodrich, Kenneth L.; and Hillman, Robert C., to Corning Glass Works. Method and apparatus for pressing glass articles. 4,361,429, Cl. 65-67.000.

Anderson, Robert C.; Jones, Jack M.; and Kollie, Thomas G., to United States of America, Energy. Extrusion-formed uranium-2.4 wt. % article with decreased linear thermal expansion and method for making the same. 4,361,447, Cl. 148-11.50F.

Ando, Takeki: *See*—
Shima, Seiya; Kuroha, Hiroaki; Ando, Takeki; Kurosawa, Toshiaki; Inaba, Hiromi; and Sakai, Yoshio, 4,361,866, Cl. 363-129.000.

Andrejasich, Raymond J.: *See*—
Perry, Ralph A.; and Andrejasich, Raymond J., 4,361,031, Cl. 73-61.10R.

Andrews, Roderic S.: *See*—
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Angermann, Manfred E., to Citadel Management Services, Inc. Display and burial system. 4,360,953, Cl. 27-14.000.

Angleman, John D.: *See*—
Robillard, Jean J.; and Angleman, John D., 4,361,108, Cl. 118-265.000.

Angus, John C.; Tomaswick, Kathleen M.; and Landau, Uziel, to University Patents, Inc. Electrolytic surface modulation. 4,361,641, Cl. 430-313.000.

Anton Schwarzkopf Stahl- und Fahrzeugbau, Firma: *See*—
Schwarzkopf, Anton, 4,361,094, Cl. 104-168.000.

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Barradas, George, 4,361,427, Cl. 55-279.000.

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Platter, Sanford; and Shelley, Pierre, 4,360,966, Cl. 29-603.000.

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Arai, Tomio: *See*—
Katakura, Hiroshi; and Arai, Tomio, 4,361,397, Cl. 355-15.000.

Araujo, Fausto G.: *See*—
Remington, Jack S.; and Araujo, Fausto G., 4,361,647, Cl. 435-7.000.

Arco Polymers, Inc.: *See*—
Bourland, Larry G., 4,361,507, Cl. 523-173.000.
Bourland, Larry G., 4,361,508, Cl. 523-173.000.

Arendt, Ronald H., to General Electric Company. Zircon retrieval. 4,361,542, Cl. 423-81.000.

Argus Chemical Corporation: *See*—
Halle, Reidar; and Peterson, David, 4,361,688, Cl. 526-230.500.

Arima, Hideo; Ito, Mituko; Ikegami, Akira; Ueno, Sadayasu; Sato, Kanemasa; and Nishimura, Yutaka, to Hitachi, Ltd. Process for making sensor for detecting fluid flow velocity or flow amount. 4,361,597, Cl. 427-53.100.

Arndt, Peter J.; Ross, Klaus; and Wenzel, Franz, to Rohm GmbH. Method for the polymerization of water soluble monomers. 4,361,687, Cl. 524-850.000.

Arndts, Dietrich: *See*—
Stricker, Herbert; Freund, Bernhard; Harwalik, Heribert; Rominger, Karl L.; Darda, Siegfried; Haselbarth, Volkmar; Arndts, Dietrich; Bechtel, Wolf D.; Bozler, Gerhard; Brickl, Rolf; and Gruber, Peter, 4,361,546, Cl. 424-19.000.

Arnold, Victor F., to Marconi Instruments Limited. Electrical test instruments. 4,361,804, Cl. 324-79.00R.

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Asai, Mitsuko; Nakahama, Kazuo; and Iwawa, Motowo, to Takeda Chemical Industries Ltd. Fermentation process of preparing demethyl maytansinoids. 4,361,650, Cl. 435-119.000.

Asakura, Osamu: *See*—
Nozaki, Mineo; Asakura, Osamu; and Nagashima, Masasumi, 4,361,844, Cl. 346-76.0PH.

Asayama, Yoshiaki: *See*—
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Dufour, Marcel; and Pascaud, Ecrire, 4,361,618, Cl. 428-234.000.

Asip, William F.; and Bartha, Miklos L. System for remote monitoring and data transmission over non-dedicated telephone lines. 4,361,851, Cl. 358-84.000.

Aslanian, Jerry L.; and Numbers, Jody L., to Master Medical Corporation. Flow control device for administration of intravenous fluids. 4,361,147, Cl. 128-214.00E.

Asp, Nils-Georg, to Tecator AB. Method for determining both water-insoluble and water-soluble plant fibre components in plant material. 4,361,646, Cl. 435-4.000.

Astatic Corporation, The: *See*—
Peterson, Donald W., 4,361,737, Cl. 179-158.00R.

Atkinson, Ivor B.; and Holdstock, Barry C., to Global Vision (U.K.) Ltd. Cross-linked hydrogel copolymers for contact lenses. 4,361,657, Cl. 523-106.000.

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Woicke, Bernd, 4,361,146, Cl. 128-206.120.

Austel, Volkhard; Heider, Joachim; Eberlein, Wolfgang; Diederen, Willi; and Haarmann, Walter, to Dr. Karl Thomae Gesellschaft mit Beschrankter Haftung. Pyridazinone-substituted benzimidazoles and salts. 4,361,563, Cl. 424-250.000.

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Dvornik, Dushan M.; and Simard-Duquesne, Nicole, 4,361,582, Cl. 424-317.000.

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Almond, David R.; Baggett, David; and Turner, Colin, 4,361,001, Cl. 56-12.800.

Bailey, Escar L., to United States of America, Army. Hot-wire anemometer gyro pickoff. 4,361,054, Cl. 74-5.60D.

Bailey, James R.; and Herron, John R., to Switchcraft, Inc. Miniature audio connector. 4,361,375, Cl. 339-91.00R.

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Banks, Edward L.; Truax, Bruce E.; and Watkins, Laurence S., to Western Electric Co., Inc. Photomask and method of using same. 4,361,643, Cl. 430-396.000.

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Sillard, Gilles; and Baril, Michel, 4,361,819, Cl. 333-109.000.

Barkalow, Clare E., to Michigan Instruments, Inc. Cardiopulmonary resuscitator massager pad. 4,361,140, Cl. 128-53.000.

Barna, Laszlo: *See*—
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Barrett, John P., Sr. Deep bathtub with elevated seat and entrance door. 4,360,935, Cl. 4-555.000.

Bartha, Miklos L.: *See*—
Asip, William F.; and Bartha, Miklos L., 4,361,851, Cl. 358-84.000.

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Weitz, Hans-Martin; Schnabel, Rolf; and Platz, Rolf, 4,361,710, Cl. 568-864.000.

BASF Farben & Fasern AG: *See*—
Streitberger, Hans-Joachim; Lessmeister, Peter; and Zdahl, Norbert, 4,361,660, Cl. 523-404.000.
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Newkirk, David D.; Login, Robert B.; and Thir, Basil, 4,361,623, Cl. 428-394.000.
Batty, John R., Jr.: *See*—
Slocum, Chester D.; and Batty, John R., Jr., 4,361,153, Cl. 128-419.00P.
Bauer, Josef: *See*—
Kunze, Dieter; and Bauer, Josef, 4,361,722, Cl. 174-93.000.
Baumann, Marcus: *See*—
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Baumberger, Otto: *See*—
Kalbskopf, Reinhard; and Baumberger, Otto, 4,361,284, Cl. 239-422.000.
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Hauschild, Wolfgang; and Baumgart, Hans J., 4,361,037, Cl. 73-295.000.
Baur, Paul S., Jr., to Board of Regents, The University of Texas System. Wound dressing. 4,361,552, Cl. 424-105.000.
Bausch & Lomb Incorporated: *See*—
Smith, Francis X.; and Riedhammer, Thomas M., 4,361,548, Cl. 424-78.000.
Baxter Travenol Laboratories, Inc.: *See*—
Schnell, William J., 4,361,481, Cl. 210-85.000.
Bayerische Motoren Werke AG: *See*—
Kramholler, Richard; Lobe, Hartwig; and Meyer, Wolfgang, 4,361,829, Cl. 340-134.000.
BBC Brown, Boveri, & Company, Limited: *See*—
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Beacham, Robert C., to Clorox Company, The. Combined container and dispenser for volatile product. 4,361,279, Cl. 239-56.000.
Beachler, Edward D.: *See*—
Wong, George H.; Embry, Lamar; Ely, Donald A.; Pantaleo, Peter F.; Cooke, Ronald D.; Chance, James L.; and Beachler, Edward D., 4,361,466, Cl. 162-207.000.
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Stricker, Herbert; Freund, Bernhard; Harwalik, Heribert; Rominger, Karl L.; Darda, Siegfried; Haselbarth, Volkmar; Arndts, Dietrich; Bechtel, Wolf D.; Bozler, Gerhard; Brickl, Rolf; and Gruber, Peter, 4,361,546, Cl. 424-19.000.
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Behrendt, Wilhelm A.; and Stieh, Bernhard, to Temmler AG. α,α-Diaryl-β-(tert-amino)-propanols and diuretic pharmaceutical compositions containing them. 4,361,573, Cl. 424-267.000.
Bell Telephone Laboratories, Incorporated: *See*—
Chang, Robert P. H., 4,361,461, Cl. 156-643.000.
Hertz, David; Kurshan, Robert P.; and Malah, David, 4,361,875, Cl. 364-724.000.
Martin, Gary D., 4,361,892, Cl. 375-14.000.
Massey, John R., 4,361,721, Cl. 174-92.000.
Smoot, Lanny S., 4,361,731, Cl. 179-6.30R.
Bell, Theodore F. Gas flame torch system with flash arresters. 4,361,420, Cl. 431-346.000.
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Beloit Corporation: *See*—
Simonds, Gary L., 4,361,210, Cl. 188-43.000.
Wong, George H.; Embry, Lamar; Ely, Donald A.; Pantaleo, Peter F.; Cooke, Ronald D.; Chance, James L.; and Beachler, Edward D., 4,361,466, Cl. 162-207.000.
Benai, Tommaso; Paoletti, Ugo; and Leoncini, Novello, to Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A. Process for the continuous spinning of viscose rayon. 4,361,532, Cl. 264-188.000.
Benavidez, Carl R. Method and apparatus for molding ceramic ware. 4,361,307, Cl. 249-118.000.
Bendix Corporation, The: *See*—
Gallusser, David O.; Hemmer, Valentine J.; and Toombs, Gary C., 4,361,373, Cl. 339-89.00M.
Gallusser, David O.; Hemmer, Valentine J.; and Toombs, Gary C., 4,361,376, Cl. 339-140.00C.
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Marmillion, David J.; Schildkraut, Alan L.; and Gallusser, David O., 4,361,374, Cl. 339-90.00R.
Roberts, James K., 4,361,214, Cl. 188-335.000.
Bengtsson, Folke, to Cark Johan Lockmans Ingenjorsbyra AB. Plate heat exchanger. 4,361,184, Cl. 165-165.000.
Benham, Albert A., to Champion International Corporation. Reverse fold lock display tray. 4,361,265, Cl. 229-16.00R.
Benthin, Siegfried, to SUNTEC Sonnenschutztechnik GmbH. Vertical blind. 4,361,179, Cl. 160-176.00R.
Bernhardt, John C., to Goodyear Tire & Rubber Company, The. Polyethylene terephthalate having a reduced acetaldehyde generation rate. 4,361,681, Cl. 525-444.000.
Bernstein, Frank: *See*—
Daniels, Herbert E.; Bernstein, Frank; Lambert, Thomas W.; and Pelc, Norbert J., 4,361,901, Cl. 378-106.000.
Berthold, Richard, to Sandoz Ltd. 3-Aminopropoxyaryl derivatives, their preparation and pharmaceutical compositions containing them. 4,361,562, Cl. 424-250.000.
Bertoli, Luciano, to Mesdan S.p.A. Device for splicing textile yarns with the aid of compressed air. 4,361,003, Cl. 57-22.000.
Best, Gary: *See*—
Ostroski, Richard J.; Aberer, James B.; and Best, Gary, 4,360,970, Cl. 30-2.000.
Bethlehem Steel Corporation: *See*—
Jones, Richard H.; Holabeck, Gus D.; and Dorian, Robert H., 4,361,097, Cl. 105-406.00R.
Larson, Duane B., 4,361,063, Cl. 83-71.000.
Betterini, William E., to United Technologies Corporation. Charge source multiplexing. 4,361,839, Cl. 340-870.130.
BICC Limited: *See*—
Collier, John C., 4,360,969, Cl. 29-881.000.
Bieber, Gerold; Boss, Franz; and Magg, Alfred, to Zahnradfabrik Friedrichshafen Aktiengesellschaft. Clutch assembly for semiautomatic gear transmission. 4,361,217, Cl. 192-103.0FA.
Bierwith, Robert S.: *See*—
Bierwith, Stanton F.; and Bierwith, Robert S., 4,360,981, Cl. 37-141.00T.
Bierwith, Stanton F.; and Bierwith, Robert S., to Suncor Inc. Lip and tooth combination for bucket wheel excavator. 4,360,981, Cl. 37-141.00T.
Biffle, John M. Stripper rubber for rotating blowout preventors. 4,361,185, Cl. 166-84.000.
Bil, Ronald J.; and Lewis, Robert H., to Ford Motor Company. Battery diagnostic method and apparatus. 4,361,809, Cl. 324-426.000.
Billerud Uddeholm Aktiebolag: *See*—
Lindberg, Erik A. S.; and Ljungqvist, Karl-Johan, 4,361,463, Cl. 162-9.000.
Bings, Hubert; Kampf, Fritz; Thome, Roland; Wargalla, Gerhard; Winkhaus, Gunter; Pietsch, Hartmut; Turke, Wolfgang; and Fischer, Peter, to Vereinigte Aluminium-Werke Aktiengesellschaft; and Metallgesellschaft Aktiengesellschaft. Method for extraction of uranium from ores. 4,361,541, Cl. 423-20.000.
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Hetherington, Robert D.; and O'Reilly, David, 4,361,283, Cl. 239-415.000.
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Black Knight Investments Limited: *See*—
Ginsburg, Stephen J.; and Draheim, Frederick E., 4,361,528, Cl. 264-28.000.
Black, Michael, to Doric Foods Corporation. Container molding and trimming method and apparatus. 4,361,531, Cl. 264-161.000.
Black, Richard I.; Ehrenfels, Alfred L.; and Marks, Michael R., to Harvey Hubbell Incorporated. Floating seal for weatherproof housing. 4,361,252, Cl. 220-344.000.
Blain, Edward S., to Sundstrand Corporation. Panel air chiller. 4,361,014, Cl. 62-237.000.
Blanchard, Floyd W. Flexible-headband attachment for a flashlight. 4,360,930, Cl. 2-209.200.
Blanquet, Claude; and Fichel, Andre. Mandrel-restraining assembly for a tube-rolling mill. 4,361,023, Cl. 72-209.000.
Blaskie, M. W.; Fox, J. R.; and Pesa, F. A., to Standard Oil Company, The. Alcohols from olefins and synthesis gas. 4,361,711, Cl. 568-909.000.
Blaupunkt Werke GmbH: *See*—
Schiller, Wilfried, 4,361,786, Cl. 315-403.000.
Bliss & Laughlin Industries Incorporated: *See*—
Hawes, Daniel D.; and Massey, Edward W., 4,361,234, Cl. 206-505.000.
Block, Barry. Method of making a capacitive force transducer. 4,360,955, Cl. 29-25.420.
Block, Siegmar, to Thyssen Industrie AG. Unlockable check valve, particularly for use as recovery and setting valve in underground mining. 4,361,075, Cl. 91-420.000.
Blount, David H. Process for the production of organic alkali metal silicate compounds. 4,361,696, Cl. 528-362.000.
Blum, Patricia R.; Milberger, Ernest C.; Bremer, Noel J.; and Dria, Dennis E., to Standard Oil Company, The. Preparation of vanadium phosphorus catalysts using a mixed phosphorus source. 4,361,501, Cl. 252-435.000.
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Boba, Joseph; Varadhachary, Seevaram N.; and Pogozelski, Vincent F., to Congoleum Corporation. Methods for bonding dissimilar synthetic polymeric materials and the products involved in and resulting from such methods. 4,361,626, Cl. 428-420.000.
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Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; Pichler, Ludwig; Hoefke, Wolfgang; and Gaida, Wolfram, 4,361,575, Cl. 424-273.00R.
Stricker, Herbert; Freund, Bernhard; Harwalik, Heribert; Rominger, Karl L.; Darda, Siegfried; Haselbarth, Volkmar; Arndts, Dietrich; Bechtel, Wolf D.; Bozler, Gerhard; Brickl, Rolf; and Gruber, Peter, 4,361,546, Cl. 424-19.000.
Boeing Company, The: *See*—
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Bogner, Ben R.; Bozer, Keith B.; Dunlop, William R.; and Leitheiser, Robert H., to Quaker Oats Company, The. Composite construction materials with improved fire resistance. 4,361,613, Cl. 428-119.000.

Bohme, Rolf C.: *See*—
Kealy, Wellesley A.; and Bohme, Rolf C., 4,361,238, Cl. 209-576.000.

Bolang, Per A.; and Burstiner, William B., to Boeing Company, The. Bidirectional mechanical load limiter. 4,361,212, Cl. 188-377.000.

Boldt, Manfred; Gubitosa, Giuseppe; Brintzinger, Hans H.; and Wild, Ferdinand, to Brintzinger, Hans H. Polymer-bound cyclopentadiene metal carbonyl compounds and their ligand substitution derivatives. 4,361,497, Cl. 252-426.000.

Bolger, Thomas V., to RCA Corporation. Video disc vari-speed playback system. 4,361,849, Cl. 358-312.000.

Bolton, Nelson P.: *See*—
Smith, W. Novis, Jr.; and Bolton, Nelson P., 4,361,433, Cl. 65-116.000.

Bomers, Joseph J. P., to Stamicarbon, B.V. Laminated board. 4,361,616, Cl. 428-215.000.

Bonnema, James V., to Gillette Company, The. Catalytic support for a curling device. 4,361,133, Cl. 126-408.000.

Bonnerot, Georges, to Telecommunications Radioelectriques et Telephoniques T.R.T. Transmission system using differential pulse code modulation. 4,361,893, Cl. 375-27.000.

Bonniwell, Joel C.; and Ocheltree, William A., to Cragar Industries Inc. Wheel disc offset attachment to wheel rim. 4,361,358, Cl. 301-6.00E.

Booher, Dale R.: *See*—
Prikkel, John, III; Booher, Dale R.; and Killin, Jeffrey R., 4,361,272, Cl. 236-1.00G.

Boonstra, Sije, to Wafilin B.V. Method of and apparatus for washing and cleaning membrane filtration units. 4,361,485, Cl. 210-636.000.

Borg, Patrick; and Deleens, Gerard, to Ato Chimie. Block copolyetheramides-based thermofusible adhesive compositions. 4,361,680, Cl. 525-420.000.

Borg-Warner Chemicals, Inc.: *See*—
Halpern, Yuval, 4,361,664, Cl. 524-118.000.

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Tan, King-Han; and de Greef, Jan L., 4,361,675, Cl. 525-71.000.

Borgersen, Lula A., administrator: *See*—
Borgersen, Roland D., deceased; Mullen, James G.; and Lineberger, James W., 4,361,034, Cl. 73-81.000.

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Borovsky, Joseph: *See*—
Weber, Robert E.; and Borovsky, Joseph, 4,361,632, Cl. 429-145.000.

Borsaru, Mihai; and Eisler, Peter L., to Commonwealth Scientific and Industrial Research Organization. Neutron activation analysis. 4,361,534, Cl. 376-159.000.

Boss, Franz: *See*—
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Bosserman, David A., to United States of America, Army. High luminance miniature display. 4,361,384, Cl. 350-174.000.

Boteanu, Silvia: *See*—
Pop, Grigore; Ivanus, Gheorghe; Boteanu, Silvia; Tomi, Pavel; and Pop, Ecaterina, 4,361,502, Cl. 252-455.00Z.

Bourland, Larry G., to Arco Polymers, Inc. Cable filler composition containing (a) crystalline polypropylene homopolymer, (b) styrene block copolymer and (c) mineral oil. 4,361,507, Cl. 523-173.000.

Bourland, Larry G., to Arco Polymers, Inc. Cable filler compositions comprising a mixture of (a) styrene block copolymer, (b) crystalline polypropylene copolymer and (c) mineral oil. 4,361,508, Cl. 523-173.000.

Bowen, John C., to Ametek, Inc. Solar energy collector assembly and sub-assemblies thereof. 4,361,134, Cl. 126-417.000.

Bowman, Clyde, to Lear Siegler, Inc. Roller motion sensing accumulator. 4,361,224, Cl. 198-781.000.

Bozer, Keith B.: *See*—
Bogner, Ben R.; Bozer, Keith B.; Dunlop, William R.; and Leitheiser, Robert H., 4,361,613, Cl. 428-119.000.

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Stricker, Herbert; Freund, Bernhard; Harwalik, Heribert; Rominger, Karl L.; Darda, Siegfried; Haselbarth, Volkmar; Arndts, Dietrich; Bechtel, Wolf D.; Bozler, Gerhard; Brickl, Rolf; and Gruber, Peter, 4,361,546, Cl. 424-19.000.

Branca, Quirico; Fischli, Albert E.; and Szente, Andre, to Hoffmann-La Roche Inc. Benzodiazepine derivatives. 4,361,511, Cl. 260-239.30D.

Brandt, Richard T.; and Hauck, Robert B., to General Electric Company. Collimator for x-ray diagnostic apparatus. 4,361,902, Cl. 378-152.000.

Bremer, Noel J.: *See*—
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Brewer, John C., to Garb-Oil Corporation of America. Process and apparatus for recovery of oil from tar sands. 4,361,476, Cl. 208-11.0LE.

Brickl, Rolf: *See*—
Stricker, Herbert; Freund, Bernhard; Harwalik, Heribert; Rominger, Karl L.; Darda, Siegfried; Haselbarth, Volkmar; Arndts, Dietrich; Bechtel, Wolf D.; Bozler, Gerhard; Brickl, Rolf; and Gruber, Peter, 4,361,546, Cl. 424-19.000.

Brimms Inc.: *See*—
Jansen, T. Paul, 4,361,325, Cl. 273-67.00A.

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Brisebarre, Marcel M., to ATS Advanced Technics & Systems, S.A. Sequential coin dispenser. 4,361,162, Cl. 133-4.00A.

Bristol Composite Materials Engineering Limited: *See*—
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Bristol, James A.; and Lovey, Raymond G., to Schering Corporation. Treatment of peptic ulcer disease. 4,361,567, Cl. 424-256.000.

British Aerospace Public Limited Company: *See*—
Sharrock, Barry, 4,361,299, Cl. 244-216.000.

British Industrial Plastics Limited: *See*—
Lawrence, Carl; Hall, Alan J.; and Inverarity, George, 4,361,674, Cl. 525-58.000.

Brock, Andrew J.: *See*—
Pryor, Michael J.; Heine, Murray A.; and Brock, Andrew J., 4,361,445, Cl. 134-3.000.

Brock, James A. Putting club including ball pick up device. 4,361,329, Cl. 273-162.00E.

Brons, Hermanus, to U.S. Philips Corporation. Halogen incandescent lamp. 4,361,780, Cl. 313-222.000.

Brooks, Arthur W.; Garibian, Vahan M.; and Sarma, Monoj K., to General Foods Corporation. Process for preparing dry quick-cooking parboiled rice and product thereof. 4,361,593, Cl. 426-627.000.

Brown, Dale M., to General Electric Company. Method of making integrated circuits. 4,361,600, Cl. 427-93.000.

Brown, Milton C.: *See*—
Ware, Jay T.; Counterman, Wayne S.; and Brown, Milton C., 4,361,183, Cl. 165-82.000.

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Brule, Gerard; Roger, Loic; Fauquant, Jacques; and Piot, Michel, to Institut National de la Recherche Agronomique. Phosphopeptides from casein-based material. 4,361,587, Cl. 426-42.000.

Brunn, Hansjoachim, to Intertrac Viehmann & Co., Firma. Master link for track chain. 4,361,364, Cl. 305-58.00R.

Bryant, Jack; Howes, John H.; and Smout, Dennis W. S., to Radiochemical Centre Limited, The. Smoke detectors. 4,361,763, Cl. 250-381.000.

Bryce, Thomas M. Method of forming artificial fingernails. 4,361,160, Cl. 132-73.000.

Bubik, Alfred; Dahl, Hans; and Kurtz, Rudiger, to Escher Wyss GmbH. Headbox for a papermaking machine. 4,361,467, Cl. 162-336.000.

Bucher, Heinrich: *See*—
Bucher, Peter, 4,360,951, Cl. 16-35.00R.

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Reeh, Kurt; Jerofke, Hans-Christoph; and Kramer, Friedrich, 4,361,336, Cl. 277-207.00A.

Bugaut, Andree; and Jeanminet, Ginette, to L'Oreal. Hair-dyeing compositions based on para-phenylenediamines. 4,361,421, Cl. 8-407.000.

Bugaut, Andree: *See*—
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Buhler, Niklaus; Baumann, Marcus; Bellus, Daniel; and Sturm, Elmar, to Ciba-Geigy Corporation. Cyclobutanedicarboxylic acid imides, and compositions for their use as phytopathogenic fungicides. 4,361,576, Cl. 424-274.000.

Bulova Watch Company, Inc.: *See*—
Sutter, Hans-Rudolf, 4,361,409, Cl. 368-80.000.

Bunder Glas GmbH: *See*—
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Burl, Michael; and Young, Ian R., to Picker International Limited. Nuclear magnetic resonance systems. 4,361,807, Cl. 324-309.000.

Burlington Industries, Inc.: *See*—
Sumner, John H., 4,361,007, Cl. 57-409.000.

Burns, Bruce P.; and Kirkendall, Richard D., to United States of America, Army. Method of making cast-in-place sabots. 4,360,954, Cl. 29-1.230.

Burstiner, William B.: *See*—
Bolang, Per A.; and Burstiner, William B., 4,361,212, Cl. 188-377.000.

Buschbom, Floyd E., to Veda, Inc. Power steering system for motor vehicle. 4,361,203, Cl. 180-213.000.

Buser, Rudolph G.; Rohde, Robert S.; and Nomiyama, Neal T., to United States of America, Army. Laser retroreflector system for identification of friend or foe. 4,361,911, Cl. 455-605.000.

Buss, Jack. Valve actuator. 4,361,308, Cl. 251-134.000.

Busse-Machukas, Vladimir B.: *See*—
Kubasov, Vladimir L.; Jurkov, Leonid I.; Busse-Machukas, Vladimir B.; Kokhanov, Georgy N.; and Lvovich, Florenty I., 4,361,603, Cl. 427-126.500.

Butler, John M.; and Chin, Charles L. D., to Monsanto Company. Method for irradiation of polymeric laminates and product. 4,361,606, Cl. 428-17.000.
Callender, Robert E.; and Montgomery, James T., to United States of America, Army. Cryogenic cooling system. 4,361,011, Cl. 62-3.000.
Campbell, William M.: *See—*
Kokenge, Elmer J.; Carlson, C. William; Backscheider, F. A.; and Campbell, William M., 4,361,099, Cl. 108-152.000.
Canadian Stackpole Limited: *See—*
King, George W.; and Fenwick, Peter, 4,361,759, Cl. 250-223.00R.
Cannady, Robert W.; and Hale, Robert E. Portable vehicle traction device. 4,361,277, Cl. 238-14.000.
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Haraguchi, Shosuke; and Yoshikawa, Ryoichi, 4,361,391, Cl. 354-288.000.
Haruta, Masahiro; Matsufuji, Yohji; Yano, Yasuhiro; Ohta, Tokuya; and Eida, Tsuyoshi, 4,361,842, Cl. 346-1.100.
Nozaki, Mineo; Asakura, Osamu; and Nagashima, Masasumi, 4,361,844, Cl. 346-76.0PH.
Sawada, Takamasa; Torigai, Akiyoshi; and Morikawa, Teruo, 4,361,399, Cl. 355-75.000.
Cape, John; and Smith, Eric, to WABCO Ltd. Hydraulic brake actuator having spring-applied back-up brake with manual release means. 4,361,078, Cl. 92-31.000.
Cark Johan Lockmans Ingenjorsbyra AB: *See—*
Bengtsson, Folke, 4,361,184, Cl. 165-165.000.
Carl Zeiss-Stiftung: *See—*
Mlcak, Ludek; and Hoerenz, Peter G., 4,361,388, Cl. 354-106.000.
Carlo Erba - S.p.A.: *See—*
Gandolfi, Carmelo; Pellegata, Renato; Ceserani, Roberto; and Usardi, Maria M., 4,361,577, Cl. 424-285.000.
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Hoyle, Gettys D., Jr., 4,361,196, Cl. 175-320.000.
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Casada, James H.: *See—*
Swetnam, Larry D.; Casada, James H.; and Walton, Linus R., 4,361,002, Cl. 56-27.500.
Casio Computer Co., Ltd.: *See—*
Ishii, Hiroshi, 4,361,067, Cl. 84-1.270.
Yasuda, Takeshi, 4,361,874, Cl. 364-710.000.
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Cassel, Knut E.; and Molin, Bengt T., to U.S. Philips Corporation. Lens antenna. 4,361,841, Cl. 343-754.000.
Castillo, Carmen; and Hayes, John C., to UOP Inc. Passivation of metal contaminants on cracking catalyst. 4,361,496, Cl. 252-416.000.
Catala, Restituto P. Clutch alarm system. 4,361,826, Cl. 340-52.00F.
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Livesay, Richard E., 4,361,363, Cl. 305-22.000.
Miller, Robert G.; and Phelps, Weldon L., 4,361,871, Cl. 364-426.000.
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Central Glass Company, Limited: *See—*
Kandachi, Takayoshi; Sueda, Keizi; and Suzuki, Minoru, 4,361,431, Cl. 65-99.500.
Centro Ricerche Fiat S.p.A.: *See—*
Pellegrini, Vittorio, 4,361,407, Cl. 366-340.000.
Ceprini, Mario Q.: *See—*
Miller, Robert S.; Hoch, Samuel; and Ceprini, Mario Q., 4,361,665, Cl. 524-289.000.
Ceserani, Roberto: *See—*
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Benham, Albert A., 4,361,265, Cl. 229-16.00R.
Evans, Wilbur G.; Nisely, Myrl A.; and Harper, Paul D., 4,361,669, Cl. 524-424.000.
Lavery, John J., 4,361,236, Cl. 206-611.000.
Roccaforte, Harry I., 4,361,270, Cl. 229-17.0SC.
Chance, James L.: *See—*
Wong, George H.; Embry, Lamar; Ely, Donald A.; Pantaleo, Peter F.; Cooke, Ronald D.; Chance, James L.; and Beachler, Edward D., 4,361,466, Cl. 162-207.000.
Chandler Evans Inc.: *See—*
Oelrich, John A.; and Divigard, Albert J., 4,361,073, Cl. 91-47.000.
Chang, Robert P. H., to Bell Telephone Laboratories, Incorporated. Hydrogen etching of semiconductors and oxides. 4,361,461, Cl. 156-643.000.
Chanter, Alan B., to Pathfinder Camping Products Limited. Wire back pack frame. 4,361,259, Cl. 224-211.000.
Chapman, James W.: *See—*
Amorese, Franklyn J.; Piarulli, Vincent J.; and Chapman, James W., 4,361,334, Cl. 277-16.000.
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Chen, Shi-Chow; and MacTaggart, John M., to Alberta Research Council. Process for the preparation of trans-3-formylbut-2-enenitrile. 4,361,702, Cl. 549-373.000.
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Chiang, Karl K.: *See—*
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Chino, Koichi: *See—*
Kikuchi, Makoto; Chino, Koichi; Kawamura, Fumio; and Yusa, Hideo, 4,361,505, Cl. 252-628.000.
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Christensen, Hans; Schlager, Paul; and Korfmann, Werner, to Ruhrkohle AG; and Maschinenfabrik Korfmann GmbH. Apparatus for extending ventilating conduits. 4,361,079, Cl. 98-50.000.
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Chow, Jacob; and Davis, John S., 4,361,194, Cl. 175-107.000.
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Buhler, Niklaus; Baumann, Marcus; Bellus, Daniel; and Sturm, Elmar, 4,361,576, Cl. 424-274.000.
Schafer, Paul; Mayer, Fritz; and Kundig, Jurg, 4,361,611, Cl. 428-96.000.
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Citizen Watch Company Ltd.: *See—*
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Grant, Norman H.; and Clark, Donald E., 4,361,574, Cl. 424-270.000.
Clark, Leebert D., to Torel, Inc. Adjustable carrying strap. 4,361,258, Cl. 224-150.000.
Clarke, John B.; and Flesher, Peter, to Allied Colloids Limited. Method of adhering wallcovering using aqueous adhesive compositions. 4,361,452, Cl. 156-71.000.
Clemens, Alexander; Schueler, Peter; Reiff, Karl; and Warga, Johann, to Robert Bosch GmbH. Control device for shutting off a diesel engine. 4,361,121, Cl. 123-198.0DB.
Clemens, Jon K., to RCA Corporation. Video disc player with RFI reduction circuit including signal subtraction. 4,361,881, Cl. 369-126.000.
Clorox Company, The: *See—*
Beacham, Robert C., 4,361,279, Cl. 239-56.000.
Cloutier, Robert P., to Eastman Kodak Company. Camera mechanism. 4,361,387, Cl. 354-43.000.
Coal Industry (Patents) Limited: *See—*
Aldridge, William R.; and Walmsley, Stanley, 4,361,219, Cl. 198-315.000.
Cole, James E., Jr.: *See—*
Luzzi, Glenn J.; and Cole, James E., Jr., 4,360,967, Cl. 29-758.000.
Cole, Martin T. Automatic centralized monitoring system. 4,361,832, Cl. 340-505.000.
Colin, Richard E.; and Pederson, Pete B., to Pettibone Corporation. Mixing equipment and agitator therefor for use with granular material and method of producing prepared granular material. 4,361,404, Cl. 366-2.000.
Collier, John C., to BICC Limited. Chain of electrical connector housings and a method of fitting a housing to an electrical contact. 4,360,969, Cl. 29-881.000.

Columbus McKinnon Corporation: *See—*
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Combustion Engineering, Inc.: *See—*
Ware, Jay T.; Counterman, Wayne S.; and Brown, Milton C., 4,361,183, Cl. 165-82.000.

Commercial Shearing, Inc.: *See—*
Williams, Arthur J., 4,361,169, Cl. 137-596.130.

Commissariat A L'Energie Atomique: *See—*
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Congoleum Corporation: *See—*
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Conoco Inc.: *See—*
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Container Corporation of America: *See—*
Philips, Nicholas A., 4,361,264, Cl. 229-15.000.

Continental Group, Inc., The: *See—*
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Control Data Corporation: *See—*
Lane, Thomas A.; and Webb, David M., 4,361,878, Cl. 364-900.000.

Cooke, Ronald D.: *See—*
Wong, George H.; Embry, Lamar; Ely, Donald A.; Pantaleo, Peter F.; Cooke, Ronald D.; Chance, James L.; and Beachler, Edward D., 4,361,466, Cl. 162-207.000.

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Cooper, Alton H.: *See—*
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Renaud, Alain P., 4,361,451, Cl. 156-64.000.

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Corbus, Henry F.; and Corbus, Richard F., 4,361,480, Cl. 209-453.000.

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Cormier, Alan D.: *See—*
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Weinberg, Melvin S.; and Cormier, Alan D., 4,361,540, Cl. 422-68.000.

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Anderson, Elmer L.; Goodrich, Kenneth L.; and Hillman, Robert C., 4,361,429, Cl. 65-67.000.

Corsette, Douglas F. Dispenser having attached and sealed closure cap. 4,361,256, Cl. 222-383.000.

Costa, Bruno, to Cselt - Centro Studi E Laboratori Telecomunicazioni S.p.A. Apparatus for determining the refractive-index profile of optical fibers. 4,361,402, Cl. 356-73.100.

Cosyns, Jean: *See—*
Derrien, Michel; Cosyns, Jean; and Torck, Bernard, 4,361,422, Cl. 44-56.000.

Couch, Richard W., Jr. Cooling and height sensing system for a plasma arc cutting tool. 4,361,748, Cl. 219-121.0PP.

Coulter Electronics, Inc.: *See—*
Hogg, Walter R., 4,361,803, Cl. 324-71.0CP.

Coulter Systems Corporation: *See—*
DiNallo, Samuel R., Sr.; and Najarian, Leon K., 4,361,112, Cl. 118-661.000.

Counterman, Wayne S.: *See—*
Ware, Jay T.; Counterman, Wayne S.; and Brown, Milton C., 4,361,183, Cl. 165-82.000.

Coussot, Gerard; and Hartemann, Pierre, to Thomson-CSF. Device for measuring the flow rate of a fluid and air flow sensor system in an internal combustion engine utilizing such a device. 4,361,050, Cl. 73-861.470.

Cragar Industries Inc.: *See—*
Bonniwell, Joel C.; and Ocheltree, William A., 4,361,358, Cl. 301-6.00E.

Crawford, Thomas C.: *See—*
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Criss, Russell C.; and Stofka, Edward J., to PPG Industries, Inc. Electroconductive window having improved bus bar. 4,361,751, Cl. 219-522.000.

Crown Zellerbach Corporation: *See—*
Schutz, Rudolph W., 4,361,085, Cl. 101-23.000.

Cselt - Centro Studi E Laboratori Telecomunicazioni S.p.A.: *See—*
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Cullen, Walter P.: *See—*
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Cummins, J. Warren. Quick release drain plug. 4,361,310, Cl. 251-144.000.

Curiger, Karl: *See—*
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Cutter Laboratories, Inc.: *See—*
Mitra, Gautam, 4,361,510, Cl. 260-112.00B.
Shackleford, John E.; and Lewis, Willie J., 4,361,148, Cl. 128-214.00D.

Czech, James I., to Whirlpool Corporation. Lubrication slinger with lint sweeper for a motor. 4,361,774, Cl. 310-90.000.

Da Costa, Nicholas M.: *See—*
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Dagnelie, Jean-Paul; Veilex, Robert; and Rahuel, Jean-Claude. Teletext and display apparatus for general surface. 4,361,725, Cl. 178-19.000.

D'Agostini, Armond N.; and Dye, Richard W., Jr., to Boeing Company, The. Microprocessor circuit providing vehicle parameter test data. 4,361,870, Cl. 364-424.000.

Dahl, Hans: *See—*
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Daido Metal Company Ltd.: *See—*
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Daikin Kogyo Co., Ltd.: *See—*
Furukawa, Yasuyoshi; and Yoshida, Shinji, 4,361,608, Cl. 428-36.000.
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Daimler-Benz A.G.: *See—*
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Daiwa Can Company, Limited: *See—*
Atsuyuki, Wakamatsu, 4,361,113, Cl. 118-694.000.

Dal Palu', Attilio, to Fister S.a.s. di Bosso Giacomo & C. Windshield wiper blade. 4,360,942, Cl. 15-250.420.

D'Amico, John F.; DeAngelo, Michael A., Jr.; and Saminathan, Manjini, to Western Electric Company, Incorporated. Method for reducing solder sticking on a printed wiring board. 4,360,968, Cl. 29-840.000.

Dana Corporation: *See—*
Overbeek, Robert B., 4,361,216, Cl. 192-36.000.

Daniels, Herbert E.; Bernstein, Frank; Lambert, Thomas W.; and Pelc, Norbert J., to General Electric Company. Multiple voltage x-ray switching system. 4,361,901, Cl. 378-106.000.

Daniels, Phillip D. Storage unit. 4,361,368, Cl. 312-138.00R.

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Davis, James A.; and Koch, Robert C., to Spartanburg Steel Products, Inc. Color stabilized molded rubber skirts in combination with stainless steel beverage syrup containers. 4,361,607, Cl. 428-35.000.

Davis, John S.: *See—*
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Davis, Ray E., Jr.; Becker, Richard J.; Foster, Robert G.; Westkamper, Michael J.; Timothy, Earle J.; and Johnson, Richard H., to Chesebrough-Pond's Inc. Digital induction motor control system. 4,361,792, Cl. 318-729.000.

Davis, Steven J.: *See—*
Barber, Tommie L.; Korodi, Miklos B.; Davis, Steven J.; Schuldt, David A.; Christenson, Paul E.; Towse, Andrew C.; Jones, Donald S.; and Roh, David J., 4,361,730, Cl. 179-5.00R.

Davis, William F.; and Tsutsumi, Masataka, to Midwestern Industries, Inc. Material separating machine. 4,361,240, Cl. 209-674.000.

Davy International AG: *See—*
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DeAngelo, Michael A., Jr.: *See—*
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DeCosa, Charles; and Spector, George. Dust collector. 4,360,947, Cl. 15-323.000.

de Cuissart, Jean D., to Mecalix. Device for relative positioning of two objects. 4,360,974, Cl. 33-180.00R.

deFasselle, Craig R.: *See—*
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de Greef, Jan L.: *See—*
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Deleens, Gerard: *See—*
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de Montgolfier, Arnaud; and Laprie, Marc, to Enertec. Remotely-controllable relays. 4,361,766, Cl. 307-3.000.

Depery, Jean: *See—*
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Depp, Steven W.; and Piggin, Bruce P., to International Business Machines Corporation. Multiple electron beam cathode ray tube. 4,361,781, Cl. 313-409.000.

Derrien, Michel; Cosyns, Jean; and Torck, Bernard, to Institut Francais du Petrole. Hydrogenation and etherification of an unsaturated C_5

hydrocarbon cut to increase its octane number and decrease its mono-olefin content. 4,361,422, Cl. 44-56.000.
Despatch Industries, Inc.: *See*—
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De Thomas, Waldo: *See*—
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Deutsch, Marshall E.; and Mead, Louis W., to Thyroid Diagnostics, Inc. Test device and method for its use. 4,361,537, Cl. 422-56.000.
D'Hondt, Marc: *See*—
Heiremans, Robert; Jacobs, Roland; and D'Hondt, Marc, 4,361,237, Cl. 206-631.000.
Diamond International Corporation: *See*—
Thomas, Leslie P., 4,361,263, Cl. 229-2.5EC.
Diamond SA: *See*—
Marazzi, Silvio, 4,361,380, Cl. 350-96.210.
Di Battista, Piero; Nelli, Giuseppe; and Gratani, Francesco, to Montedison S.p.A. Polyesters of N,N-di-alkanol-amines with di-(hydroxy-alkyl-benzyl) malonic acids and use thereof as stabilizers for polymers. 4,361,695, Cl. 528-289.000.
Dicoi, Ovidiu; and Wainberg, Ronald P., to Davy International AG. Continuous moving bed reactor for manufacture of high molecular weight polyethylene terephthalate. 4,361,538, Cl. 422-62.000.
Didier Engineering GmbH: *See*—
Meckel, Joachim; Joseph, Horst; and Wagener, Dietrich, 4,360,976, Cl. 34-20.000.
Mertens, Alfred; and Schafer, Franz, 4,361,468, Cl. 202-239.000.
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Diepers, Heinrich; and Musebeck, Horst, to Siemens Aktiengesellschaft. Current transfer brush. 4,361,775, Cl. 310-248.000.
Di Liddo, Natale, to Istituto Grafico Bertello S.p.A. Storage system. 4,361,411, Cl. 414-277.000.
DiNallo, Samuel R., Sr.; and Najarian, Leon K., to Coulter Systems Corporation. Apparatus for developing latent electrostatic images. 4,361,112, Cl. 118-661.000.
Dineen, John J., to Mechanical Technology Incorporated. Stirling engine compressor with compressor and engine working fluid equalization. 4,361,008, Cl. 60-521.000.
Dion, Daniel J.; and Ranini, Daniel G., to Poclain. Supporting chassis for a working machine such as a mechanical shovel. 4,361,242, Cl. 212-253.000.
Disko, Harry: *See*—
Schoenfield, Palmer J.; and Disko, Harry, 4,360,988, Cl. 46-39.000.
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Oelrich, John A.; and Divigard, Albert J., 4,361,073, Cl. 91-47.000.
DiVito, Angelo. Pulsating nozzle. 4,361,282, Cl. 239-383.000.
Dobberstein, Robert H.; and Ahmed, Mohamed S., to F. K. Suzuki International, Inc. Extraction, separation and recovery of diterpene glycosides from *Stevia rebaudiana* plants. 4,361,697, Cl. 536-128.000.
Dobner, Alfred: *See*—
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Dodd, John R.; and Weimer, Dean R., to Conoco Inc. Termination of vinyl halide polymerization. 4,361,683, Cl. 526-84.000.
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Dorian, Robert H.: *See*—
Jones, Richard H.; Holabeck, Gus D.; and Dorian, Robert H., 4,361,097, Cl. 105-406.00R.
Doric Foods Corporation: *See*—
Black, Michael, 4,361,531, Cl. 264-161.000.
Doty, Gerald A., to Gateway Industries, Inc. Tension relieving mechanism. 4,361,294, Cl. 242-107.700.
Douglas, Edward C., to RCA Corporation. Apparatus and method for neutralizing the beam in an ion implanter. 4,361,762, Cl. 250-251.000.
Dow Chemical Company, The: *See*—
Reifschneider, Walter, 4,361,556, Cl. 424-216.000.
Shipley, Randall S., 4,361,685, Cl. 526-114.000.
Solomon, Jeffry A.; and Young, Harold W., Jr., 4,361,504, Cl. 252-463.000.
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Dow Corning Corporation: *See*—
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Downing, Gerald T.; Stepanski, Eugene R.; and Wirth, Gary J., to W. H. Brady Co. Assembly of tubular sleeve markers. 4,361,230, Cl. 206-345.000.
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Resneau, Jean-Claude; Doyen, Jean; and Ribier, Robert, 4,361,720, Cl. 174-16.0HS.
Drabing, Richard B.; and Duvall, William S., to Amtel Systems Corp. Thermal message printer. 4,361,726, Cl. 178-23.00R.
Draheim, Frederick E.: *See*—
Ginsburg, Stephen J.; and Draheim, Frederick E., 4,361,528, Cl. 264-28.000.
Dresser Industries, Inc.: *See*—
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Dria, Dennis E.: *See*—
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Dubbelday, Pieter S.; and Timme, Robert W., to United States of America, Navy. Ferrofluid transducer. 4,361,879, Cl. 367-141.000.
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Hargis, Duane C.; and Dubeck, Michael, 4,361,499, Cl. 252-430.000.
Dubin, Leonard, to Nalco Chemical Company. Particulate dispersant enhancement using acrylamide-acrylic acid copolymers. 4,361,492, Cl. 252-175.000.
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Du Pont de Nemours, E. I., and Company: *See*—
Forsten, Herman H.; Frankenburg, Peter E.; and Shah, Jagdish N., 4,361,619, Cl. 428-234.000.
Grossa, Mario, 4,361,642, Cl. 430-325.000.
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Pine, Herbert J., 4,361,640, Cl. 430-275.000.
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Marshall, Irl H., Jr.; and Bald, Paul R., 4,360,946, Cl. 15-321.000.
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Drabing, Richard B.; and Duvall, William S., 4,361,726, Cl. 178-23.00R.
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D'Agostini, Armond N.; and Dye, Richard W., Jr., 4,361,870, Cl. 364-424.000.
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Hallstedt, Lennart; and Soderberg, Bengt, 4,361,201, Cl. 180-19.00H.
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Earle, John L. Hot gas vehicular power system with regeneration. 4,361,204, Cl. 180-302.000.
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Cloutier, Robert P., 4,361,387, Cl. 354-43.000.
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Isaacson, Henry V.; and Regan, Michael T., 4,361,636, Cl. 430-32.000.
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Michal, Vratislav M., 4,361,221, Cl. 198-459.000.
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Peloza, Kirk, 4,361,170, Cl. 137-625.290.
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Edwards, Roy. Method of treatment to relieve pain in muscles or bones. 4,361,585, Cl. 424-342.000.
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Ehrat, Kurt, to Zeag Systems AG. Card-like data carrier. 4,361,757, Cl. 235-487.000.

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Eidschun, Charles D., to Micro-Plate, Inc. Connector contact point. 4,361,470, Cl. 204-15.000.

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Borsaru, Mihai; and Eisler, Peter L., 4,361,534, Cl. 376-159.000.

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Jones, Gregory W.; and Jones, L. Raymond, Jr., 4,361,053, Cl. 73-864.530.

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Sidline, George B.; Henshaw, John F.; and Elkus, Eugene S., 4,361,755, Cl. 235-476.000.

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Ellis, Carleton, Jr.: *See—*
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Ellis, Jack T.; and Slaback, Travis W. Electromagnetic milling device. 4,361,291, Cl. 241-79.000.

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Perry, Ralph A.; and Andrejasich, Raymond J., 4,361,031, Cl. 73-61.10R.

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Energy Vent, Inc.: *See—*
Prikkel, John, III; Booher, Dale R.; and Killin, Jeffrey R., 4,361,272, Cl. 236-1.00G.

Enertec: *See—*
de Montgolfier, Arnaud; and Laprie, Marc, 4,361,766, Cl. 307-3.000.

Eng, King D., to Texaco Inc. Method for fabricating an exhaust gas treating unit. 4,360,957, Cl. 29-157.00R.

Engle, Gary L., to General Electric Company. Reference voltage generation means for controlling a display. 4,361,043, Cl. 73-620.000.

Eppich, Alfred: *See—*
Theisen, Gunter; Eppich, Alfred; and Hochleitner, Rudolf H., 4,361,622, Cl. 428-363.000.

Erndt, Hans: *See—*
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Ernst Leitz Wetzlar GmbH: *See—*
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Gustafson, Wayne, 4,361,341, Cl. 280-415.00R.

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Kajihara, Toyota; Kawasaki, Atsushi; Nishio, Fujikazu; and Esaki, Akira, 4,361,315, Cl. 266-99.000.

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Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 4,361,516, Cl. 260-396.00N.

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Kushner, Burton A.; and Jirinec, Michael J., 4,361,604, Cl. 427-423.000.

Evans, Robert W. Double acting hydraulic mechanism. 4,361,195, Cl. 175-297.000.

Evans, Wilbur G.; Nisely, Myrl A.; and Harper, Paul D., to Champion International Corporation. Coating compositions comprising a reaction product of a dispersed hydroxy-alkyl modified starch product and a hydrolyzed styrene maleic anhydride copolymer. 4,361,669, Cl. 524-424.000.

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Kern, John W.; Spann, Michael M.; and Hoyer, Wilmer A., 4,361,808, Cl. 324-366.000.

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Agarwal, Pawan K.; Hughes, Vincent L.; and Lundberg, Robert D., 4,361,663, Cl. 524-62.000.
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Cooke, Theodore M.; Whitfield, Richard G.; and Lin, An-Chung R., 4,361,843, Cl. 346-1.100.
Flory, John F., 4,361,165, Cl. 137-69.000.
Johnson, Burnett H., 4,361,667, Cl. 524-327.000.
Langer, Arthur W.; Steger, John J.; and Burkhardt, Terry J., 4,361,714, Cl. 585-521.000.
Lundberg, Robert D.; O'Brien, Dennis E.; Makowski, Henry S., deceased; and Klein, Robert R., 4,361,658, Cl. 523-132.000.
Rabinowitz, Paul; and Perry, Bruce N., 4,361,770, Cl. 307-426.000.

F. K. Suzuki International, Inc.: *See—*
Dobberstein, Robert H.; and Ahmed, Mohamed S., 4,361,697, Cl. 536-128.000.

Falk Corporation, The: *See—*
Witt, Ronald A., 4,361,058, Cl. 74-665.0GD.

Fancher, Llewellyn W.; and Walker, Francis H., to Stauffer Chemical Company. Method of increasing the yield of legumes utilizing chloroacetyl-aminoacid ethyl esters. 4,361,439, Cl. 71-106.000.

Farrell, Joseph P.; and Thompson, Chester C., Jr., to Radiation Dynamics, Inc. Voltage stabilized particle accelerator system and method. 4,361,812, Cl. 328-233.000.

Fauck, Gerhard, to Wabco Fahrzeugbremsen GmbH. Adapter for testing for leakage in brake force regulating devices in fluid pressure operable brake systems. 4,361,362, Cl. 303-22.00A.

Faulhaber, Fritz. Small D.C. motor. 4,361,789, Cl. 318-254.000.

Faulring, Gloria M.; Fitzgibbon, Alan; and Slish, Frank, to Union Carbide Corporation. Vanadium addition agent for iron-base alloys. 4,361,442, Cl. 75-57.000.

Fauquant, Jacques: *See—*
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Faust, Manfred: *See—*
Lessnig, Werner; Metz, Gunter; Spiegel, Willi; Faust, Manfred; and Junkers, Gunter, 4,361,032, Cl. 73-64.400.

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Fecker, Josef; and Memminger, Gustav, to Memminger, GmbH. Thread supply apparatus, particularly for knitting machine. 4,361,292, Cl. 242-47.010.

Felix, Pierre; and Guyot, Lucien, to Thomson-CSF. Target for picture tube, tube provided with such a target and picture apparatus incorporating such a tube. 4,361,783, Cl. 315-374.000.

Felix, Raymond A., to Stauffer Chemical Company. Substituted cyclopropyl methoxy phenyl ureas and the herbicidal use thereof. 4,361,438, Cl. 71-98.000.

Fellmann, Ruedi, to Max Langenstein Feld- und Gartengerate GmbH & Co. Garden trimmer. 4,360,971, Cl. 30-296.00R.

Fenwick, Peter: *See—*
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Fergus, David A.: *See—*
Shaner, Kenneth H.; Thoman, Bruce J.; Peterson, Mark D.; Fergus, David A.; and Chiang, Karl K., 4,361,612, Cl. 428-106.000.

Fichel, Andre: *See—*
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Fici, Francesco, to Istituto Luso Farmaco D'Italia S.p.A. Use of pyridoxine α-ketoglutarate in the prophylaxis of hyperlacticacidaemia. 4,361,570, Cl. 424-263.000.

Fifolt, Michael J., to Occidental Chemical Corporation. Difluorophthaloyl fluoride. 4,361,521, Cl. 260-544.00F.

Finley, Donald J. Irrigation sprinkler. 4,361,278, Cl. 239-8.000.

Firestone Tire & Rubber Company, The: *See—*
Lawson, David F., 4,361,668, Cl. 524-398.000.

Firth, Donald, to Tosco Corporation. Retort seal mechanism with integral bearings. 4,361,333, Cl. 277-12.000.

Fischer, Peter: *See—*
Bings, Hubert; Kampf, Fritz; Thome, Roland; Wargalla, Gerhard; Winkhaus, Gunter; Pietsch, Hartmut; Turke, Wolfgang; and Fischer, Peter, 4,361,541, Cl. 423-20.000.

Fischli, Albert E.: *See—*
Branca, Quirico; Fischli, Albert E.; and Szente, Andre, 4,361,511, Cl. 260-239.30D..

Fister S.a.s. di Bosso Giacomo & C.: *See—*
Dal Palu', Attilio, 4,360,942, Cl. 15-250.420.

Fitzgerald, Harry G., to Tech-Tran, Inc. Tampon. 4,361,151, Cl. 128-285.000.

Fitzgibbon, Alan: *See—*
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Flesher, Peter: *See—*
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Flory, John F., to Exxon Research and Engineering Co. Breakaway pipe coupling with automatically closed valves. 4,361,165, Cl. 137-69.000.

Fluid Kinetics, Inc.: *See*—
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Flynn, William E.; and Mountain, Charles F., to Instrumentation Laboratory Inc. Liquid transfer device. 4,361,253, Cl. 222-162.000.
FMC Corporation: *See*—
Hills, William A.; and Brown, Richard A., 4,361,487, Cl. 210-759.000.
Fodali, Adolph; and Gering, George, to S & G Tool Aid Corp. Circuit test device. 4,361,800, Cl. 324-53.000.
Ford Motor Company: *See*—
Bil, Ronald J.; and Lewis, Robert H., 4,361,809, Cl. 324-426.000.
Forsten, Herman H.; Frankenburg, Peter E.; and Shah, Jagdish N., to Du Pont de Nemours, E. I., and Company. Filter of poly(tetrafluoroethylene) and glass fibers. 4,361,619, Cl. 428-234.000.
Foster, Edwin E.; and Foster, Thomas E., to Ladney, Michael, Jr. Wire bending machine. 4,361,025, Cl. 72-381.000.
Foster, John A., to J. L. Clark Manufacturing Co. Plastic container closure. 4,361,250, Cl. 220-266.000.
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Foster, Edwin E.; and Foster, Thomas E., 4,361,025, Cl. 72-381.000.
Fournier, Claude: *See*—
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Francis, Peter M. Adjustable rotary crusher. 4,361,290, Cl. 241-57.000.
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Franssen, Nico V., deceased; and by de Haan, Friedrich J., administrator, to U.S. Philips Corporation. Sound reproducing arrangement for artificial reverberation. 4,361,727, Cl. 179-1.00J.
Freeman, Michael H., to Pilkington P.E. Limited. Biocular viewing apparatus. 4,361,378, Cl. 350-36.000.
Freppel, Christian, to Compagnie Generale Des Etablissements Michelin. Process for preparing bimodal or multimodal polymers of conjugated dienes. 4,361,682, Cl. 526-66.000.
Freund, Bernhard: *See*—
Stricker, Herbert; Freund, Bernhard; Harwalik, Heribert; Rominger, Karl L.; Darda, Siegfried; Haselbarth, Volkmar; Arndts, Dietrich; Bechtel, Wolf D.; Bozler, Gerhard; Brickl, Rolf; and Gruber, Peter, 4,361,546, Cl. 424-19.000.
Friberg, Nathan J., to Toro Company, The. Bagging filament mower. 4,361,000, Cl. 56-13.400.
Friedemann, Wolfgang; and Laut, Bernhard, to Henkel Kommanditgesellschaft auf Aktien. Adhesives and coating materials based upon alkali metal silicate solutions. 4,361,659, Cl. 523-220.000.
Friedrich, Klaus; Nicolai, Rainer; Schweiger, Fritz; and Wachholz, Winfried, to Hochtemperatur-Reaktorbau GmbH; and Hochtemperatur-Kernkraftwerk GmbH. Control system and process for the operation of nuclear reactors. 4,361,535, Cl. 376-215.000.
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Tuneski, Richard J.; and Frisbey, Robert M., 4,361,249, Cl. 220-254.000.
Frister, Manfred; Renner, Stefan; Meyer, Friedhelm; and Lack, Peter, to Robert Bosch GmbH. Electrical connection system for rectifiers. 4,361,867, Cl. 363-145.000.
Frohbieter, Edwin H., to Whirlpool Corporation. Rotating heat exchanger for a dryer. 4,360,977, Cl. 34-86.000.
Fuji Jukogyo Kabushiki Kaisha: *See*—
Nakamura, Hiroyuki, 4,361,124, Cl. 123-440.000.
Fuji Photo Film Co., Ltd.: *See*—
Higashi, Akio; Kawashiri, Kazuhiro; and Mizobuchi, Yuzo, 4,361,638, Cl. 430-58.000.
Fujigsu Limited: *See*—
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Fujii, Yuji; and Oda, Chikao, to Hitachi, Ltd. Method and apparatus for removing volatile matter from highly viscous material. 4,361,462, Cl. 159-6.00W.
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Fujitsu Fanuc Limited: *See*—
Kawada, Shigeki; and Ishida, Hiroshi, 4,361,794, Cl. 318-800.000.
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Kurihara, Hiroshi; and Katoh, Tadayoshi, 4,361,894, Cl. 375-80.000.
Fujiwara, Kanji, to Fujitsu Limited. Method of mounting a semiconductor laser device. 4,360,965, Cl. 29-582.000.
Fukubi Kagaku Kogyo Kabushiki Kaisha: *See*—
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Fukuda, Daiki; Morishita, Teru; and Suzuki, Toshikazu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Rotating speed detecting device of a rotary type electrostatic spray painting device. 4,361,288, Cl. 239-703.000.
Fukuda, Tsutomu. Weaving defect detector. 4,361,171, Cl. 139-348.000.
Fukuda, Yasuaki, to Fukuda, Yasuaki; and Kenkyusho, Yakurigaku Chuo. Skin-beautifying cosmetic composition. 4,361,581, Cl. 424-312.000.
Fukuhara, Takao; and Iwasa, Yoshio, to Nissan Motor Company, Limited. Intake vacuum control device for internal combustion engine. 4,361,127, Cl. 123-587.000.
Fukushima, Yasuhiro, to Kabushiki Kaisha Daini Seikosha. Micro stepping motor for electronic watches. 4,361,772, Cl. 310-49.00R.
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Fukuyama, Kunihiko: *See*—
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Fulcher, Carol A.: *See*—
Zimmerman, Theodore S.; and Fulcher, Carol A., 4,361,509, Cl. 260-112.00B.
Fulton, James E., Jr., to A.H.C. Pharmacal, Inc. Composition and method for the treatment of acne. 4,361,584, Cl. 424-338.000.
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Funk, Stanley T., to Ortner Freight Car Company. Railway hopper car door seal. 4,361,096, Cl. 105-248.000.
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Alig, Leo; Furst, Andor; Keller, Peter; Muller, Marcel; Kerb, Ulrich; and Wiechert, Rudolf, 4,361,578, Cl. 424-285.000.
Furukawa, Hiroshi; and Tsuyuri, Takehiko, to Sumitomo Rubber Industries, Ltd. Curable composition for hard rubber and the use thereof. 4,361,677, Cl. 525-133.000.
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GAF Corporation: *See*—
Hort, Eugene V.; and De Thomas, Waldo, 4,361,495, Cl. 252-411.00R.
McCarthy, Robert F.; and Kliegman, Jonathan M., 4,361,436, Cl. 71-86.000.
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Galbraith, William, to Riker Laboratories, Inc. Method of enzymatic debridement. 4,361,551, Cl. 424-94.000.
Galkov, Mikhail I.: *See*—
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Gallagher, Paul H. Continuous laundering. 4,361,018, Cl. 68-43.000.
Gallusser, David O.; Hemmer, Valentine J.; and Toombs, Gary C., to Bendix Corporation, The. Electrical connector comprised of plastic. 4,361,373, Cl. 339-89.00M.
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Gardner, James J.: *See*—
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Putnam, Howard G., 4,360,937, Cl. 8-152.000.

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Carpenter, John R.; Cassanelli, Robert R.; and Markert, Frank J., 4,361,592, Cl. 426-579.000.
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Kealy, Wellesley A.; and Bohme, Rolf C., 4,361,238, Cl. 209-576.000.

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Tanrikut, Ibrahim S.; Wagner, Walter B.; Segalman, Irwin; and Goldberg, Perry, 4,361,010, Cl. 60-757.000.

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Anderson, Elmer L.; Goodrich, Kenneth L.; and Hillman, Robert C., 4,361,429, Cl. 65-67.000.

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Goto, Akio: *See*—
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Luijpers, Johannes G. T., 4,361,802, Cl. 324-65.00R.

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Uemura, Yahiro; Uriyu, Katuhiro; and Funakoshi, Satoshi, 4,361,652, Cl. 435-188.000.
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Groves, Stanley E., to Motorola, Inc. Microcomputer with logic for selectively disabling serial communications. 4,361,876, Cl. 364-900.000.

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Ulicny, Thomas A., 4,361,199, Cl. 177-154.000.
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Patel, Gajendra M., 4,360,960, Cl. 29-426.500.
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Kim, Han J.; Peters, Thomas E.; and Gustafson, John, 4,361,033, Cl. 73-64.400.
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Gutleber, Frank S., to United States of America, Army. Satellite communication system. 4,361,886, Cl. 370-69.100.
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Hagner, Willi, to Ernst Leitz Wetzlar GmbH. Illuminating device having a curved optical conductor. 4,361,863, Cl. 362-32.000.
Haldric, Bernard, to NACAM. Coupling clamp and a method of manufacture therefor. 4,361,024, Cl. 72-379.000.
Hale, Robert E.: *See*—
Cannady, Robert W.; and Hale, Robert E., 4,361,277, Cl. 238-14.000.
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Hall, Floyd V., to Liggett Group Inc. Method and applicator for applying glue to a travelling stream of tipping paper. 4,361,156, Cl. 131-90.000.
Hall, Leslie G.; Larson, David V.; Smith, Michael A.; and Wood, Stuart K., to Boeing Company, The. Uniflange coupling assembly. 4,361,296, Cl. 244-54.000.
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Hargis, Duane C.; and Dubeck, Michael, to Ethyl Corporation. Catalyst for converting methanol and synthesis gas to ethanol. 4,361,499, Cl. 252-430.000.
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Smith, David K.; Harlow, Nigel; and Maxfield, Samuel W., 4,361,080, Cl. 99-277.100.
Harper, Leroy D.; and Oliver, Arthur B., to Texas Instruments Incorporated. Calculator with constant memory. 4,361,873, Cl. 364-707.000.
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Harris, Alan L., to Lucas Industries Limited. Suspension systems for vehicles. 4,361,346, Cl. 280-707.000.
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Hartmannsgruber, Max, to Zinser Textilmaschinen GmbH. Bearing support for bobbin-spindle drive. 4,361,004, Cl. 57-100.000.
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Hayashi, Nobutoshi: *See*—
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Austel, Volkhard; Heider, Joachim; Eberlein, Wolfgang; Diederen, Willi; and Haarmann, Walter, 4,361,563, Cl. 424-250.000.

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Helene Curtis Industries, Inc.: *See*—
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Singh, Balwant; and Henderson, William A., Jr., 4,361,518, Cl. 260-453.00P.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Friedemann, Wolfgang; and Laut, Bernhard, 4,361,659, Cl. 523-220.000.

Henry Balfour & Company Ltd.: *See*—
Smith, David K.; Harlow, Nigel; and Maxfield, Samuel W., 4,361,080, Cl. 99-277.100.

Henshaw, John F.: *See*—
Sidline, George B.; Henshaw, John F.; and Elkus, Eugene S., 4,361,755, Cl. 235-476.000.

Henson, D. Wayne: *See*—
Allen, Hugh T.; and Henson, D. Wayne, 4,361,245, Cl. 220-2.000.

Henszey, Richard R. Gas separating device. 4,361,424, Cl. 55-205.000.

Herdtle, Heinrich: *See*—
Weeger, Hans-Peter; and Herdtle, Heinrich, 4,361,005, Cl. 57-117.000.

Hergeth, Incorporated: *See*—
Smith, George F., Jr., 4,360,997, Cl. 53-528.000.

Herman, Carl H.; Johnson, Anderson F., Jr.; Large, Donald M.; and Tamashasky, Joseph A., to Western Electric Co., Inc. Introducing elongated magnetic articles into containers. 4,360,995, Cl. 53-437.000.

Herman, Frederick L.; and Sawicki, John E., to Air Products and Chemicals, Inc. Cyanide reduction in nitroaromatic process. 4,361,712, Cl. 568-932.000.

Hermann Berstorff Maschinenbau GmbH: *See*—
Reschke, Reinhold, 4,361,456, Cl. 156-179.000.

Hernandez, Alexander J. Novel container to impregnate shaving brushes. 4,361,228, Cl. 206-216.000.

Hernqvist, Karl G.; and Pultorak, Donald C., to RCA Corporation. Apparatus and method for cleaning shadow masks in color picture tubes. 4,361,370, Cl. 316-2.000.

Herron, John R.: *See*—
Bailey, James R.; and Herron, John R., 4,361,375, Cl. 339-91.00R.

Hertz, David; Kurshan, Robert P.; and Malah, David, to Bell Telephone Laboratories, Incorporated. Multiple tone detector and locator. 4,361,875, Cl. 364-724.000.

Herz, Jack L., to Nutrisearch Company. Fabricated food products from textured protein particles. 4,361,588, Cl. 426-104.000.

Hester, Jay L.; and Banks, Irving P. Mail box conversion kit. 4,361,271, Cl. 232-17.000.

Hetherington, Robert D.; and O'Reilly, David, to Binks Manufacturing Company. Plural component spray gun convertible from air atomizing to airless. 4,361,283, Cl. 239-415.000.

Heye, Hermann: *See*—
Schneider, Wilhelm, 4,361,434, Cl. 65-265.000.

Hibi, Kunio: *See*—
Ikeda, Sunao; Kaneko, Tamaki; Hibi, Kunio; Okuzawa, Tugio; Kakitani, Yohtaro; and Kikuchi, Hideo, 4,361,319, Cl. 271-209.000.

Hibler, Diane E.: *See*—
Wauters, Ronald P.; Kenyon, Ralph E.; Sarma, Monoj K.; Layton, Larry L.; Swanson, Wade H.; and Hibler, Diane E., 4,361,589, Cl. 426-270.000.

Higashi, Akio; Kawashiri, Kazuhiro; and Mizobuchi, Yuzo, to Fuji Photo Film Co., Ltd. Electrophotographic element with alpha -Si and C material doped with H and F and process for producing the same. 4,361,638, Cl. 430-58.000.

Hill, Robert S.: *See*—
Grajek, Stanley A.; Hill, Robert S.; and Klaiber, George S., 4,361,458, Cl. 156-264.000.

Hiller, Walther, to Steigerwald Strahltechnik GmbH. Piston having at least one piston ring groove. 4,360,956, Cl. 29-156.50R.

Hillman, Patrick E.; and White, Preston S., to PPG Industries, Inc. Method of forming a permionic membrane. 4,361,601, Cl. 427-123.000.

Hillman, Robert C.: *See*—
Anderson, Elmer L.; Goodrich, Kenneth L.; and Hillman, Robert C., 4,361,429, Cl. 65-67.000.

Hills, William A.; and Brown, Richard A., to FMC Corporation. Control of hydrogen sulfide emission from geothermal steam plants with hydrogen peroxide and sodium vanadate. 4,361,487, Cl. 210-759.000.

Hilvenna Limited: *See*—
Saxby, Michael E., 4,361,093, Cl. 102-447.000.

Hinger, Klaus-Jurgen, to Werner & Pfleiderer. Procedure and installation for the incinerating of sludge. 4,361,100, Cl. 110-238.000.

Hintsch, Otto, to Karl Mayer Textil-Maschinen-Fabrik. Pattern mechanism. 4,361,017, Cl. 66-207.000.

Hirabayashi, Tsugio: *See*—
Iwai, Fumio; Koiso, Junichi; Hirabayashi, Tsugio; and Ura, Hiroaki, 4,360,944, Cl. 15-256.510.

Hirao, Motohisa: *See*—
Nakamura, Michiharu; Hirao, Motohisa; Yamashita, Shigeo; Fukuzawa, Tadashi; and Umeda, Junichi, 4,361,887, Cl. 372-50.000.

Hirose, Yoshiteru: *See*—
Yasuda, Naohiko; Eguchi, Chikahiko; Okutsu, Masaru; and Hirose, Yoshiteru, 4,361,560, Cl. 424-246.000.

Hirota, Kazumi; and Matsuoka, Kikuo, to Toyo Seikan Kaisha, Limited. Drawing apparatus. 4,361,020, Cl. 72-57.000.

Hitachi, Ltd.: *See*—
Arima, Hideo; Ito, Mituko; Ikegami, Akira; Ueno, Sadayasu; Sato, Kanemasa; and Nishimura, Yutaka, 4,361,597, Cl. 427-53.100.
Fujii, Yuji; and Oda, Chikao, 4,361,462, Cl. 159-6.00W.
Kikuchi, Makoto; Chino, Koichi; Kawamura, Fumio; and Yusa, Hideo, 4,361,505, Cl. 252-628.000.
Nakamura, Michiharu; Hirao, Motohisa; Yamashita, Shigeo; Fukuzawa, Tadashi; and Umeda, Junichi, 4,361,887, Cl. 372-50.000.
Niimi, Hirohide, 4,361,908, Cl. 455-164.000.
Shima, Seiya; Kuroha, Hiroaki; Ando, Takeki; Kurosawa, Toshiaki; Inaba, Hiromi; and Sakai, Yoshio, 4,361,866, Cl. 363-129.000.
Suzuki, Toshitsugu, 4,361,417, Cl. 417-13.000.
Takahashi, Fuminobu, 4,361,042, Cl. 73-603.000.
Teraoku, Hiroshi; and Yamaguchi, Hideki, 4,361,254, Cl. 222-196.000.
Tsukuda, Kiyoshi, 4,361,846, Cl. 357-20.000.
Watatani, Yoshizumi, 4,361,813, Cl. 329-132.000.

Hoch, Samuel: *See*—
Miller, Robert S.; Hoch, Samuel; and Ceprini, Mario Q., 4,361,665, Cl. 524-289.000.

Hochleitner, Rudolf H.: *See*—
Theisen, Gunter; Eppich, Alfred; and Hochleitner, Rudolf H., 4,361,622, Cl. 428-363.000.

Hochtemperatur-Kernkraftwerk GmbH: *See*—
Friedrich, Klaus; Nicolai, Rainer; Schweiger, Fritz; and Wachholz, Winfried, 4,361,535, Cl. 376-215.000.

Hochtemperatur-Reaktorbau GmbH: *See*—
Friedrich, Klaus; Nicolai, Rainer; Schweiger, Fritz; and Wachholz, Winfried, 4,361,535, Cl. 376-215.000.

Hodges, Bonnie E. Concrete crack sealing system. 4,360,994, Cl. 52-744.000.

Hoechst Aktiengesellschaft: *See*—
Otten, Joachim W., deceased; Otten, Ursula, heir; Rudolph nee Otten, Anna G., heir; and Meininger, Fritz, 4,361,698, Cl. 544-211.000.
Teetz, Volker; Uhmann, Rainer; and Knapp, Rudolf, 4,361,482, Cl. 210-198.200.

Hoefke, Wolfgang: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; Pichler, Ludwig; Hoefke, Wolfgang; and Gaida, Wolfram, 4,361,575, Cl. 424-273.00R.

Hoerenz, Peter G.: *See*—
Mlcak, Ludek; and Hoerenz, Peter G., 4,361,388, Cl. 354-106.000.

Hoffmann-La Roche Inc.: *See*—
Branca, Quirico; Fischli, Albert E.; and Szente, Andre, 4,361,511, Cl. 260-239.30D.

Hofmann, Karl; and Seifert, Kurt, to Robert Bosch GmbH. Fuel injection nozzle for internal combustion engines. 4,361,286, Cl. 239-453.000.

Hogan, Alfred D., to Geosource, Inc. Sphere launching method. 4,361,446, Cl. 134-8.000.

Hogg, Walter R., to Coulter Electronics, Inc. Apparatus for recirculating sweep flow electrolyte without a pump. 4,361,803, Cl. 324-71.0CP.

Holabeck, Gus D.: *See*—
Jones, Richard H.; Holabeck, Gus D.; and Dorian, Robert H., 4,361,097, Cl. 105-406.00R.

Holdstock, Barry C.: *See*—
Atkinson, Ivor B.; and Holdstock, Barry C., 4,361,657, Cl. 523-106.000.

Holkestad, Howard P. Anti-theft packaging device. 4,361,233, Cl. 206-387.000.

Holliday, David H. Removable bin system in a collator. 4,361,321, Cl. 271-292.000.

Holmes, James F., to Oregon Graduate Center for Study and Research. Apparatus for monitoring and controlling the distribution of droplets on a surface. 4,361,110, Cl. 118-665.000.

Holmes, Ralph. Calculator and apparatus for macrophotography. 4,361,752, Cl. 235-64.700.

Homolik, Matthew W. Circulating-air heating stove with exit air heat extractor. 4,361,131, Cl. 126-123.000.

Honaga, Susumu; and Sato, Akihiko, to Toyoda Koki Kabushiki Kaisha. Flow controlling apparatus for power steering, operating fluid. 4,361,166, Cl. 137-117.000.

Honeywell Inc.: *See*—
Eck, Bertil, 4,361,824, Cl. 338-171.000.
McMullen, Raymond F.; and Wamstad, David B., 4,361,047, Cl. 73-721.000.
Reinke, Thomas R., 4,361,771, Cl. 307-497.000.
Stillwell, HarryF., 4,361,817, Cl. 332-9.00T.

Honeywell Information Systems Inc.: *See*—
Johnson, Robert B.; and Nibby, Chester M., Jr., 4,361,869, Cl. 364-200.000.

Honma, Kazuhiro; Shimizu, Kajuro; Nakatani, Tetsu; and Takenaka, Eiichi, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Device for displaying feature of contour image. 4,361,830, Cl. 340-146.3AC.

Hoover, Charles C.: *See*—
Wood, Forrest L.; Jensen, Dale H.; Poley, Kenneth P.; Hoover, Charles C.; and Wilson, Gary L., 4,361,102, Cl. 114-56.000.

Hoover Company, The: *See*—
Miller, Michael S., 4,360,950, Cl. 15-412.000.

Hoppel, Rainer: *See*—
Knapp, Heinrich; Lembke, Manfred; Linssen, Mathias; Peczkowski, Jurgen; and Hoppel, Rainer, 4,361,126, Cl. 123-585.000.

Hori, Kenji; Kiyota, Yuhiko; and Akishino, Katsuo, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine. 4,361,123, Cl. 123-308.000.

Horn, William H.: *See*—
Sugama, Toshifumi; Kukacka, Lawrence E.; and Horn, William H., 4,361,670, Cl. 524-811.000.

Hort, Eugene V.; and De Thomas, Waldo, to GAF Corporation. Regeneration of supported-nickel catalysts. 4,361,495, Cl. 252-411.00R.

Hosaka, Akihiko: *See*—
Isobe, Yukihiro; Okuyama, Kiyotaka; Hosaka, Akihiko; and Kobayashi, Hideo, 4,361,621, Cl. 428-329.000.

Hose, Wanda H. Automotive communication. 4,361,828, Cl. 340-107.000.

Hoskinson, William R.; and Miguel, Edward K., to Wurlitzer Company, The. Record operated control system for a vending machine. 4,361,754, Cl. 235-381.000.

Hospital for Sick Children, The: *See*—
Volgyesi, George A., 4,361,049, Cl. 73-861.050.

Hou, Kenneth C.; and Webster, Timothy J., to AMF Incorporated. Filter media, method for oxidizing and removing soluble iron, method for removing and inactivating microorganisms, and particulate filter aid. 4,361,486, Cl. 210-722.000.

Howard, James R. Apparatus for processing oilseed and grain mash products. 4,361,081, Cl. 99-348.000.

Howes, John H.: *See*—
Bryant, Jack; Howes, John H.; and Smout, Dennis W. S., 4,361,763, Cl. 250-381.000.

Howlett, Larry D. Cooling tower with plume prevention system. 4,361,524, Cl. 261-150.000.

Hoyer, Wilmer A.: *See*—
Kern, John W.; Spann, Michael M.; and Hoyer, Wilmer A., 4,361,808, Cl. 324-366.000.

Hoyle, Gettys D., Jr., to Carmet Company. Roof bit coupling. 4,361,196, Cl. 175-320.000.

Huang, Linus. Concentric solar collector. 4,361,136, Cl. 126-438.000.

Huang, Sun Y.; and Giglia, Robert D., to American Cyanamid Company. Electrochromic device containing acid copolymer electrolyte. 4,361,385, Cl. 350-357.000.

Hubbard, James B.; and Makus, Thomas E., to Mak-Ard Industries, Incorporated. Method and apparatus for decorative etching of surfaces. 4,360,990, Cl. 51-410.000.

Hughes, Vincent L.: *See*—
Agarwal, Pawan K.; Hughes, Vincent L.; and Lundberg, Robert D., 4,361,663, Cl. 524-62.000.
Agarwal, Pawan K.; Hughes, Vincent L.; and Lundberg, Robert D., 4,361,672, Cl. 525-54.500.

Huiner, Tona L. Method and apparatus for music instruction on a barred or keyboard instrument. 4,361,070, Cl. 84-478.000.

Hull, Maury L.; and Ramming, John E., to University of California, The Regents of the. Ski binding with universal release. 4,361,344, Cl. 280-613.000.

Hunstad, Richard L.; and Kasner, William H., to Westinghouse Electric Corp. Technique for increasing the efficiency of low pressure, short pulse laser systems. 4,361,888, Cl. 372-55.000.

Hutchinson, William J., to Eastman Kodak Company. Image-transfer method and apparatus. 4,361,392, Cl. 354-302.000.

Huttinger, Johann, to Helmut Bernhardt GmbH u. Co. KG. Pointer instrument movement. 4,361,048, Cl. 73-729.000.

Hutzell, Clyde H., to Kennametal Inc. Blast hole grooving bit and wear resistant compact. 4,361,197, Cl. 175-407.000.

Hvizd, Andrew, Jr.; and Pye, Richard T., to Harvey Hubbell Incorporated. Insulated high voltage cables. 4,361,723, Cl. 174-102.0SC.

Hyde, William. Earthing systems. 4,361,719, Cl. 174-6.000.

Iacovangelo, Charles D.; and Zarnoch, Kenneth P., to General Electric Company. Electrode material for molten carbonate fuel cells. 4,361,631, Cl. 429-40.000.

Ibrahim, Fayez F., to Tyler Refrigeration Corporation. Energy efficient refrigerated merchandiser display case. 4,361,012, Cl. 62-82.000.

Igarashi, Isao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Engine control system for a combination car system. 4,361,200, Cl. 180-14.00R.

Igarashi, Tsuyoshi, to Fujigsu Limited. Fault location method in mass-storage system. 4,361,855, Cl. 360-39.000.

Igashira, Toshihiko; Ishida, Yasuhiko; Nomura, Ken; and Abe, Seiko, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Fuel evaporator for internal combustion engine. 4,361,125, Cl. 123-549.000.

Iizuka, Syogo: *See*—
Suzuki, Yoshitsugu; Iizuka, Syogo; Kajiyama, Shigeo; Usui, Kenji; and Kobayashi, Masahiro, 4,360,962, Cl. 29-564.400.

Ikeda, Sunao; Kaneko, Tamaki; Hibi, Kunio; Okuzawa, Tugio; Kakitani, Yohtaro; and Kikuchi, Hideo, to Ricoh Co., Ltd. Bin for receiving sheets. 4,361,319, Cl. 271-209.000.

Ikegami, Akira: *See*—
Arima, Hideo; Ito, Mituko; Ikegami, Akira; Ueno, Sadayasu; Sato, Kanemasa; and Nishimura, Yutaka, 4,361,597, Cl. 427-53.100.

Illmann, Joachim: *See*—
Golz, Hans-Joachim; and Illmann, Joachim, 4,361,316, Cl. 269-43.000.

Imperial Chemical Industries Limited: *See*—
Short, Glyn D.; Spencer, Michael S.; and Whittam, Thomas V., 4,361,715, Cl. 585-640.000.

Inaba, Hiromi: *See*—
Shima, Seiya; Kuroha, Hiroaki; Ando, Takeki; Kurosawa, Toshiaki; Inaba, Hiromi; and Sakai, Yoshio, 4,361,866, Cl. 363-129.000.

Inaba, Yasuo: *See*—
Marutake, Yozo; Fukutome, Tatsuro; Inaba, Yasuo; and Fukuyama, Kunihiko, 4,361,733, Cl. 179-82.000.

Industrie Ottiche Riunite S.p.A.: *See*—
Leopardi, Stefania, 4,361,536, Cl. 422-33.000.

Ing. C. Olivetti & C., S.p.A.: *See*—
Simonotti, Lucio; and Motta, Carlo, 4,361,086, Cl. 101-93.180.

Innova, Inc.: *See*—
Moeglich, Karl, 4,361,475, Cl. 204-252.000.

Institut Francais du Petrole: *See*—
Derrien, Michel; Cosyns, Jean; and Torck, Bernard, 4,361,422, Cl. 44-56.000.

Institut National de la Recherche Agronomique: *See*—
Brule, Gerard; Roger, Loic; Fauquant, Jacques; and Piot, Michel, 4,361,587, Cl. 426-42.000.

Institutul de Inginerie Tehnologica Si Proiectari Pentru Industria Chimica - IITPIC: *See*—
Pop, Grigore; Ivanus, Gheorghe; Boteanu, Silvia; Tomi, Pavel; and Pop, Ecaterina, 4,361,502, Cl. 252-455.00Z.

Instrumentation Laboratory Inc.: *See*—
Flynn, William E.; and Mountain, Charles F., 4,361,253, Cl. 222-162.000.
Smith, Stanley B., Jr.; Schleicher, Robert G.; and Eldred, Edward C., 4,361,401, Cl. 356-36.000.
Weinberg, Melvin S.; and Cormier, Alan D., 4,361,539, Cl. 422-68.000.
Weinberg, Melvin S.; and Cormier, Alan D., 4,361,540, Cl. 422-68.000.

International Business Machines Corporation: *See*—
Depp, Steven W.; and Piggin, Bruce P., 4,361,781, Cl. 313-409.000.
Rajeevakumar, Thekkemadathil V., 4,361,768, Cl. 307-245.000.
Smith, Gordon J., 4,361,845, Cl. 346-140.00R.

International Harvester Company: *See*—
Gagliani, John; Lee, Raymond; and Wilcoxson, Anthony L., 4,361,453, Cl. 156-79.000.

International Paper Company: *See*—
Sexton, Dennis F.; and Hadaskay, Richard J., 4,361,268, Cl. 229-62.500.
Shaner, Kenneth H.; Thoman, Bruce J.; Peterson, Mark D.; Fergus, David A.; and Chiang, Karl K., 4,361,612, Cl. 428-106.000.

International Telephone and Telegraph Corporation: *See*—
Majkrzak, Charles P.; and Phillips, Thomas R., 4,361,372, Cl. 339-64.00M.

Intertrac Viehmann & Co., Firma: *See*—
Brunn, Hansjoachim, 4,361,364, Cl. 305-58.00R.

Inverarity, George: *See—*
Lawrence, Carl; Hall, Alan J.; and Inverarity, George, 4,361,674, Cl. 525-58.000.

Irons, Ronald E.: *See—*
Barnes, Laurence A., Jr.; and Irons, Ronald E., 4,361,729, Cl. 179-1.50R.

Isaacson, Henry V.; and Regan, Michael T., to Eastman Kodak Company. Ionic polyesters for electrically photosensitive composite particles, materials, elements and photoelectrophotoretic imaging methods. 4,361,636, Cl. 430-32.000.

Ishida, Hiroshi: *See—*
Kawada, Shigeki; and Ishida, Hiroshi, 4,361,794, Cl. 318-800.000.

Ishida, Yasuhiko: *See—*
Igashira, Toshihiko; Ishida, Yasuhiko; Nomura, Ken; and Abe, Seiko, 4,361,125, Cl. 123-549.000.

Ishida, Yasukazu: *See—*
Isobe, Susumu; Nakajima, Hajime; Kondo, Tatsuo; Watanabe, Katsutoshi; Ishida, Yasukazu; Okada, Takeshi; and Kobayashi, Taiki, 4,361,443, Cl. 75-128.00W.

Ishigami, Noriakira; Hasebe, Takahisa; and Kaminishizono, Takeyoshi, to Aisin Seiki Kabushiki Kaisha. Sanitary device. 4,360,934, Cl. 4-420.200.

Ishii, Hiroshi, to Casio Computer Co., Ltd. Electronic musical instrument with keyboard. 4,361,067, Cl. 84-1.270.

Ishii, Kenshun: *See—*
Kimura, Ryusuke; Saito, Shuichi; and Ishii, Kenshun, 4,360,933, Cl. 4-301.000.

Ishikawa, Masamichi: *See—*
Hayashi, Tsuneyuki; Ishikawa, Masamichi; and Miwa, Hiromitsu, 4,361,776, Cl. 310-268.000.

Isobe, Susumu; Nakajima, Hajime; Kondo, Tatsuo; Watanabe, Katsutoshi; Ishida, Yasukazu; Okada, Takeshi; and Kobayashi, Taiki, to Japan Atomic Energy Research Institute; and Power Reactor and Nuclear Fuel Development Corporation. Solid solution strengthened iron-base austenitic alloy. 4,361,443, Cl. 75-128.00W.

Isobe, Yukihiro; Okuyama, Kiyotaka; Hosaka, Akihiko; and Kobayashi, Hideo, to TDK Electronics Co., Ltd. Magnetic recording medium. 4,361,621, Cl. 428-329.000.

Israeli, Leonardo, to Rockwell International Corporation. Method of making expanded sandwich structures. 4,361,262, Cl. 228-118.000.

Istituto Grafico Bertello S.p.A.: *See—*
Di Liddo, Natale, 4,361,411, Cl. 414-277.000.

Istituto Luso Farmaco D'Italia S.p.A.: *See—*
Fici, Francesco, 4,361,570, Cl. 424-263.000.

Ito, Mituko: *See—*
Arima, Hideo; Ito, Mituko; Ikegami, Akira; Ueno, Sadayasu; Sato, Kanemasa; and Nishimura, Yutaka, 4,361,597, Cl. 427-53.100.

Ito, Zyouzi: *See—*
Takahashi, Yoshinobu; Tokushima, Yasuo; Ogata, Kentarou; Suzuki, Mamoru; and Ito, Zyouzi, 4,361,605, Cl. 427-424.000.

Itoh, Katsumi: *See—*
Akita, Yoshio; Itoh, Katsumi; Muto, Katsuya; Iwaki, Katsutaro; and Nakamoto, Takeshi, 4,361,796, Cl. 322-99.000.

ITT Industries, Inc.: *See—*
Schopper, Bernd; and Tandler, Peter, 4,361,361, Cl. 303-6.00C.

Ivanus, Gheorghe: *See—*
Pop, Grigore; Ivanus, Gheorghe; Boteanu, Silvia; Tomi, Pavel; and Pop, Ecaterina, 4,361,502, Cl. 252-455.00Z.

Iwai, Fumio; Koiso, Junichi; Hirabayashi, Tsugio; and Ura, Hiroaki, to Konishiroku Photo Industry Co., Ltd. Toner transporting device for an electrostatic recording apparatus. 4,360,944, Cl. 15-256.510.

Iwaki, Katsutaro: *See—*
Akita, Yoshio; Itoh, Katsumi; Muto, Katsuya; Iwaki, Katsutaro; and Nakamoto, Takeshi, 4,361,796, Cl. 322-99.000.

Iwasa, Yoshio: *See—*
Fukuhara, Takao; and Iwasa, Yoshio, 4,361,127, Cl. 123-587.000.

Iwasaki, Shinichiro, to Aisin Seiki Company, Limited. Vibration sensor. 4,361,045, Cl. 73-654.000.

Iyoda, Michio: *See—*
Sugie, Osamu; Hachiga, Takasi; and Iyoda, Michio, 4,361,129, Cl. 123-622.000.

Izawa, Motowo: *See—*
Asai, Mitsuko; Nakahama, Kazuo; and Izawa, Motowo, 4,361,650, Cl. 435-119.000.

J. D. Moller Optische Werke GmbH, Firma: *See—*
Klein, Friedrich, 4,361,379, Cl. 350-91.000.

J. I. Case Company: *See—*
Maurer, Herman J.; and Shumaker, John F., 4,360,982, Cl. 37-141.00R.

J. L. Clark Manufacturing Co.: *See—*
Foster, John A., 4,361,250, Cl. 220-266.000.

Jackson, Kenneth W., to Western Electric Company, Incorporated. Thermal backfill composition method. 4,361,661, Cl. 523-442.000.

Jackson, Leigh F.; and Kappenhagen, George A., to Westinghouse Electric Corp. Modular elevator car. 4,361,208, Cl. 187-1.00R.

Jackson, Leigh F.: *See—*
Kappenhagen, George A.; and Jackson, Leigh F., 4,361,209, Cl. 187-17.000.

Jacobs, Roland: *See—*
Heiremans, Robert; Jacobs, Roland; and D'Hondt, Marc, 4,361,237, Cl. 206-631.000.

James, Odie R. Method of curling negroid hair without rollers. 4,361,157, Cl. 132-7.000.

Jansen, T. Paul, to Brimms Inc. Hockey stick shaft. 4,361,325, Cl. 273-67.00A.

Jansons, Viktors, to Raychem Corporation. Preparation of poly(arylene ketones) using thio- and dithiocarbonic acid derivatives. 4,361,693, Cl. 528-86.000.

Japan Atomic Energy Research Institute: *See—*
Isobe, Susumu; Nakajima, Hajime; Kondo, Tatsuo; Watanabe, Katsutoshi; Ishida, Yasukazu; Okada, Takeshi; and Kobayashi, Taiki, 4,361,443, Cl. 75-128.00W.

Jarvis, Jack D., to Aluma Form, Inc. Backhoe adapter. 4,360,980, Cl. 37-117.500.

Jastrzebski, Lubomir L., to RCA Corporation. Method of making CCD imagers with reduced defects. 4,360,963, Cl. 29-571.000.

Jeanminet, Ginette: *See—*
Bugaut, Andree; and Jeanminet, Ginette, 4,361,421, Cl. 8-407.000.

Jenkins, Carlton G.; and Johnson, Robert R., to GTE Products Corporation. Wire wafer fabricating process. 4,361,174, Cl. 140-140.000.

Jenks, Betty J., executrix: *See—*
Jenks, Herbert R., deceased; and Jenks, Betty J., executrix, 4,361,533, Cl. 264-258.000.

Jenks, Herbert R., deceased; and by Jenks, Betty J., executrix, to AMF Incorporated. Method for making racket frames. 4,361,533, Cl. 264-258.000.

Jeno's, Inc.: *See—*
Paulucci, Jeno F., 4,361,227, Cl. 206-45.320.

Jensen, Dale H.: *See—*
Wood, Forrest L.; Jensen, Dale H.; Poley, Kenneth P.; Hoover, Charles C.; and Wilson, Gary L., 4,361,102, Cl. 114-56.000.

Jerofke, Hans-Christoph: *See—*
Reeh, Kurt; Jerofke, Hans-Christoph; and Kramer, Friedrich, 4,361,336, Cl. 277-207.00A.

Jirinec, Michael J.: *See—*
Kushner, Burton A.; and Jirinec, Michael J., 4,361,604, Cl. 427-423.000.

Jobst Institute, Inc.: *See—*
Montgomery, John R., 4,360,972, Cl. 33-17.00R.

Johannesen, Donald D., to Bendix Corporation, The. Method for manufacturing a drum brake shoe. 4,360,959, Cl. 29-417.000.

Johnson, Anderson F., Jr.: *See—*
Herman, Carl H.; Johnson, Anderson F., Jr.; Large, Donald M.; and Tamashasky, Joseph A., 4,360,995, Cl. 53-437.000.

Johnson, Burnett H., to Exxon Research & Engineering Co. Poly(parabanic acid) films having improved flammability resistance by the addition of copper chelates and organo halides. 4,361,667, Cl. 524-327.000.

Johnson, Christian E., Sr., to United States of America, Commerce. Ultra-black coating due to surface morphology. 4,361,630, Cl. 428-613.000.

Johnson, David E.; and Toth, Alexander, to Air Products and Chemicals, Inc. Underwater cutting and welding torch. 4,361,746, Cl. 219-70.000.

Johnson, Donald O., to American Can Company. Material handling apparatus. 4,361,223, Cl. 198-751.000.

Johnson, Edward G. T.; and Morgan, Adrian J., to Post Office, The. Electret microphone circuit. 4,361,735, Cl. 179-111.00E.

Johnson, Gordon C.: *See—*
Weinberg, Kurt; and Johnson, Gordon C., 4,361,694, Cl. 528-279.000.

Johnson & Johnson Products, Inc.: *See—*
Sipos, Tibor; Gander, Robert J.; and Buck, Carl J., 4,361,547, Cl. 424-56.000.

Johnson, Larry C., to United States of America, Energy. Grating tuned unstable resonator laser cavity. 4,361,889, Cl. 372-95.000.

Johnson, Raymond A., to UMC Industries, Inc. Coin handling device. 4,361,161, Cl. 133-3.00R.

Johnson, Richard H.: *See—*
Davis, Ray E., Jr.; Becker, Richard J.; Foster, Robert G.; Westkamper, Michael J.; Timothy, Earle J.; and Johnson, Richard H., 4,361,792, Cl. 318-729.000.

Johnson, Robert B.; and Nibby, Chester M., Jr., to Honeywell Information Systems Inc. Multimode memory system using a multiword common bus for double word and single word transfer. 4,361,869, Cl. 364-200.000.

Johnson, Robert R.: *See—*
Jenkins, Carlton G.; and Johnson, Robert R., 4,361,174, Cl. 140-140.000.

Jones, Donald S.: *See—*
Barber, Tommie L.; Korodi, Miklos B.; Davis, Steven J.; Schuldt, David A.; Christenson, Paul E.; Towse, Andrew C.; Jones, Donald S.; and Roh, David J., 4,361,730, Cl. 179-5.00R.

Jones, Edward M., to Baldwin Piano & Organ Company. Tempo measurement, display, and control system for an electronic musical instrument. 4,361,066, Cl. 84-1.030.

Jones, Gregory W.; and Jones, L. Raymond, Jr., to Electro-Nite Co. Molten metal bath temperature sensor and sampler. 4,361,053, Cl. 73-864.530.

Jones, Jack M.: *See—*
Anderson, Robert C.; Jones, Jack M.; and Kollie, Thomas G., 4,361,447, Cl. 148-11.50F.

Jones, L. Raymond, Jr.: *See—*
Jones, Gregory W.; and Jones, L. Raymond, Jr., 4,361,053, Cl. 73-864.530.

Jones, Richard H.; Holabeck, Gus D.; and Dorian, Robert H., to Bethlehem Steel Corporation. Railway gondola cars. 4,361,097, Cl. 105-406.00R.

Joseph, Horst: *See—*
Meckel, Joachim; Joseph, Horst; and Wagener, Dietrich, 4,360,976, Cl. 34-20.000.

Junkers, Gunter: *See*—
Lessnig, Werner; Metz, Gunter; Spiegel, Willi; Faust, Manfred; and Junkers, Gunter, 4,361,032, Cl. 73-64.400.
Jurkov, Leonid I.: *See*—
Kubasov, Vladimir L.; Jurkov, Leonid I.; Busse-Machukas, Vladimir B.; Kokhanov, Georgy N.; and Lvovich, Florenty I., 4,361,603, Cl. 427-126.500.
K&R Engineering Sales Corporation: *See*—
Stapleton, John J., 4,361,785, Cl. 315-389.000.
K & S Industries, Inc.: *See*—
Krug, Charles C., 4,360,983, Cl. 37-233.000.
Kabushiki Kaisha Daini Seikosha: *See*—
Fukushima, Yasuhiro, 4,361,772, Cl. 310-49.00R.
Kojima, Yoshikazu; and Kamiya, Masaaki, 4,361,797, Cl. 323-316.000.
Kabushiki Kaisha Gemvac: *See*—
Kashiwagi, Yoshiyuki; Tanigaki, Shuzo; Kondo, Naoki; and Suzuki, Tsutae, 4,361,742, Cl. 200-144.00B.
Kabushiki Kaisha Meidensha: *See*—
Kashiwagi, Yoshiyuki; Tanigaki, Shuzo; Kondo, Naoki; and Suzuki, Tsutae, 4,361,742, Cl. 200-144.00B.
Kabushiki Kaisha Nihon Gijutsu Center: *See*—
Koroyasu, Arata; and Takenaka, Hiroshi, 4,361,311, Cl. 254-200.000.
Kabushiki Kaisha Sato: *See*—
Sato, Yo, 4,361,087, Cl. 101-109.000.
Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Harata, Shoichi; and Kobayashi, Hirotsugi, 4,361,739, Cl. 200-16.00C.
Kabuto, Masami: *See*—
Endo, Norio; Asayama, Yoshiaki; and Kabuto, Masami, 4,361,119, Cl. 123-52.00M.
Kadomaru, Kazuo: *See*—
Nakahama, Kozo; Kadomaru, Kazuo; and Okaniwa, Masuzo, 4,361,454, Cl. 156-133.000.
Kaeding, Warren W., to Mobil Oil Corporation. Para-selective zeolite catalysts treated with halogen compounds. 4,361,713, Cl. 585-467.000.
Kaganowicz, Grzegorz; and Robinson, John W., to RCA Corporation. Method for preparing an abrasive lapping disc. 4,361,595, Cl. 427-39.000.
Kahan, William: *See*—
Marsh, Walter H. W.; and Kahan, William, 4,361,101, Cl. 112-110.000.
Kahn, Arthur R. Hearing aid. 4,361,734, Cl. 179-107.00R.
Kai, Masami: *See*—
Washio, Takaji; and Kai, Masami, 4,361,395, Cl. 355-14.00R.
Kaiho, Shinichi: *See*—
Takaku, Sakae; Matsuura, Fumiaki; Mori, Takashi; Murakami, Yasushi; Kataoka, Shigeyuki; Takeda, Yasuhisa; Yamashita, Yasuhiro; Takeda, Yumiko; Matsuno, Takashi; Mizuno, Koji; Kaiho, Shinichi; Yamazaki, Tamotsu; Hata, Shun-ichi; and Takanashi, Shigeru, 4,361,572, Cl. 424-266.000.
Kajihara, Toyota; Kawasaki, Atsushi; Nishio, Fujikazu; and Esaki, Akira, to Nippon Steel Corporation. Sonde apparatus for blast furnace. 4,361,315, Cl. 266-99.000.
Kajiyama, Shigeo: *See*—
Suzuki, Yoshitsugu; Iizuka, Syogo; Kajiyama, Shigeo; Usui, Kenji; and Kobayashi, Masahiro, 4,360,962, Cl. 29-564.400.
Kakitani, Yohtaro: *See*—
Ikeda, Sunao; Kaneko, Tamaki; Hibi, Kunio; Okuzawa, Tugio; Kakitani, Yohtaro; and Kikuchi, Hideo, 4,361,319, Cl. 271-209.000.
Kakuta, Yoshiyuki: *See*—
Saito, Tadao; Kishi, Takao; and Kakuta, Yoshiyuki, 4,361,255, Cl. 222-321.000.
Kalbskopf, Reinhard; and Baumberger, Otto, to Societa Italiana Vetro-Siv-S.p.A. Nozzle for the continuous depositing of a layer of solid material on a substrate. 4,361,284, Cl. 239-422.000.
Kalina, Alexander I. Formation flow channel blocking. 4,361,186, Cl. 166-295.000.
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, to Societe Anonyme dite: L'Oreal. N-Monosubstituted indoanilines. 4,361,516, Cl. 260-396.00N.
Kaminishizono, Takeyoshi: *See*—
Ishigami, Noriakira; Hasebe, Takahisa; and Kaminishizono, Takeyoshi, 4,360,934, Cl. 4-420.200.
Kamiya, Masaaki: *See*—
Kojima, Yoshikazu; and Kamiya, Masaaki, 4,361,797, Cl. 323-316.000.
Kamiya, Sigeru; Wakayama, Junji; Hayashi, Nobutoshi; Noguchi, Hiroshi; Uchida, Kenichi; and Mori, Nobuhisa, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. System for measuring particulate discharge from vehicular internal combustion engine. 4,361,028, Cl. 73-28.000.
Kampf, Fritz: *See*—
Bings, Hubert; Kampf, Fritz; Thome, Roland; Wargalla, Gerhard; Winkhaus, Gunter; Pietsch, Hartmut; Turke, Wolfgang; and Fischer, Peter, 4,361,541, Cl. 423-20.000.
Kanada, Eiji; Kondo, Toshiro; and Yamada, Shoji, to Mitsubishi Paper Mills, Ltd. Method for treating lithographic printing plates. 4,361,639, Cl. 430-204.000.
Kandachi, Takayoshi; Sueda, Keizi; and Suzuki, Minoru, to Central Glass Company, Limited. Method of forming thin sheet glass by float process. 4,361,431, Cl. 65-99.500.
Kaneko, Tamaki: *See*—
Ikeda, Sunao; Kaneko, Tamaki; Hibi, Kunio; Okuzawa, Tugio; Kakitani, Yohtaro; and Kikuchi, Hideo, 4,361,319, Cl. 271-209.000.
Kikuchi, Hideo; and Kaneko, Tamaki, 4,361,320, Cl. 271-288.000.
Kaplan, Jean P., to Synthelabo. Analgesic agent. 4,361,583, Cl. 424-319.000.
Kaplinsky, Cecil H., to U.S. Philips Corporation. Device for increasing the length of a logic computer address. 4,361,868, Cl. 364-200.000.
Kappenhagen, George A.; and Jackson, Leigh F., to Westinghouse Electric Corp. Elevator system. 4,361,209, Cl. 187-17.000.
Kappenhagen, George A.: *See*—
Jackson, Leigh F.; and Kappenhagen, George A., 4,361,208, Cl. 187-1.00R.
Karaharju, Erkki O.: *See*—
Slatis, Par E. V.; and Karaharju, Erkki O., 4,361,144, Cl. 128-92.00A.
Karl Mayer Textil-Maschinen-Fabrik: *See*—
Hintsch, Otto, 4,361,017, Cl. 66-207.000.
Karl Mengele & Sohne Maschinenfabruk und Eisengiesserei GmbH & Co.: *See*—
Reiff, Harro, 4,361,062, Cl. 83-71.000.
Karlsen, Tore. Automatic hand firearm. 4,361,072, Cl. 89-154.000.
Karmelkorn Shoppes, Inc.: *See*—
Tunick, Abraham L., 4,361,356, Cl. 297-129.000.
Karnis, Alkibiadis, to Domtar Inc. Rapid method for liberating the latent properties of mechanical pulps. 4,361,464, Cl. 162-49.000.
Kashiwagi, Yoshiyuki; Tanigaki, Shuzo; Kondo, Naoki; and Suzuki, Tsutae, to Kabushiki Kaisha Meidensha; and Kabushiki Kaisha Gemvac. Vacuum power interrupter. 4,361,742, Cl. 200-144.00B.
Kasner, William H.: *See*—
Hunstad, Richard L.; and Kasner, William H., 4,361,888, Cl. 372-55.000.
Katakura, Hiroshi; and Arai, Tomio, to Konishiroku Photo Industry Co., Ltd. Cleaning apparatus for an electrostatic recording machine. 4,361,397, Cl. 355-15.000.
Kataoka, Shigeyuki: *See*—
Takaku, Sakae; Matsuura, Fumiaki; Mori, Takashi; Murakami, Yasushi; Kataoka, Shigeyuki; Takeda, Yasuhisa; Yamashita, Yasuhiro; Takeda, Yumiko; Matsuno, Takashi; Mizuno, Koji; Kaiho, Shinichi; Yamazaki, Tamotsu; Hata, Shun-ichi; and Takanashi, Shigeru, 4,361,572, Cl. 424-266.000.
Katoh, Haruhiko: *See*—
Hashimoto, Shunichi; Oshio, Hiromichi; Mizutani, Masato; Sanemitsu, Yuzuru; Katoh, Haruhiko; Sumida, Seizo; and Ooishi, Tadashi, 4,361,437, Cl. 71-93.000.
Katoh, Tadayoshi: *See*—
Kurihara, Hiroshi; and Katoh, Tadayoshi, 4,361,894, Cl. 375-80.000.
Katzfey, Lance J., to Sony Corporation. Signal processing circuit for video signal with buried audio signal. 4,361,852, Cl. 358-145.000.
Kawada, Shigeki; and Ishida, Hiroshi, to Fujitsu Fanuc Limited. Induction motor drive apparatus. 4,361,794, Cl. 318-800.000.
Kawai, Hisasi: *See*—
Sakakibara, Yasuyuki; Kawai, Hisasi; Sakurai, Kazuhiro; and Hattori, Kyo, 4,361,164, Cl. 137-14.000.
Kawamata, Motoo; Ohshima, Kazushi; Onofusa, Mitsuo; Kudoh, Akihide; Kotani, Makoto; and Tsuda, Takeshi, to Mitsui Toatsu Chemicals, Inc. Process for the production of o-alkylated phenols. 4,361,709, Cl. 568-804.000.
Kawami, Youji: *See*—
Torikai, Eiichi; Kawami, Youji; and Wakabayashi, Noboru, 4,361,602, Cl. 427-123.000.
Kawamura, Fumio: *See*—
Kikuchi, Makoto; Chino, Koichi; Kawamura, Fumio; and Yusa, Hideo, 4,361,505, Cl. 252-628.000.
Kawasaki, Atsushi: *See*—
Kajihara, Toyota; Kawasaki, Atsushi; Nishio, Fujikazu; and Esaki, Akira, 4,361,315, Cl. 266-99.000.
Kawashiri, Kazuhiro: *See*—
Higashi, Akio; Kawashiri, Kazuhiro; and Mizobuchi, Yuzo, 4,361,638, Cl. 430-58.000.
Kay Laboratories, Inc.: *See*—
Truelock, Donald E., 4,361,491, Cl. 252-70.000.
Kealy, Wellesley A.; and Bohme, Rolf C., to General Mining Union Corporation Limited. Ore sorter. 4,361,238, Cl. 209-576.000.
Keegan, Patrick J.: *See*—
Raleigh, William F.; and Keegan, Patrick J., 4,361,274, Cl. 236-21.00B.
Keeler, Frederick D.; and Ellis, Carleton, Jr., to KLM Company, The. Method for making a container closure with liner. 4,361,457, Cl. 156-224.000.
Keim, Carroll R. Process for making fermentable sugars and high-protein products. 4,361,651, Cl. 435-161.000.
Keller, Halbert J. Pivoting bed. 4,360,936, Cl. 5-9.00R.
Keller, Peter: *See*—
Alig, Leo; Furst, Andor; Keller, Peter; Muller, Marcel; Kerb, Ulrich; and Wiechert, Rudolf, 4,361,578, Cl. 424-285.000.
Keller, Wolfgang, to Siemens Aktiengesellschaft. Current lead-in of the coaxial type for sealing to a container wall. 4,361,716, Cl. 373-147.000.
Kelly, Peter B., to General Electric Company. Bowling lane. 4,361,615, Cl. 428-203.000.
Kemp, Merle L., Jr. Door holding device. 4,361,354, Cl. 296-1.00C.
Kendall Company, The: *See*—
Patel, Bhupendra C., 4,361,152, Cl. 604-99.000.

Patience, Donald, 4,361,231, Cl. 206-362.000.
Kenkyusho, Yakurigaku Chuo: *See*—
Fukuda, Yasuaki, 4,361,581, Cl. 424-312.000.
Kennametal Inc.: *See*—
Hutzell, Clyde H., 4,361,197, Cl. 175-407.000.
Kennedy, Thomas M.: *See*—
Rupert, Gary F.; Kennedy, Thomas M.; and MacGregor, John R., 4,361,745, Cl. 219-69.00G.
Kenyon, Ralph E.: *See*—
Wauters, Ronald P.; Kenyon, Ralph E.; Sarma, Monoj K.; Layton, Larry L.; Swanson, Wade H.; and Hibler, Diane E., 4,361,589, Cl. 426-270.000.
Kerb, Ulrich: *See*—
Alig, Leo; Furst, Andor; Keller, Peter; Muller, Marcel; Kerb, Ulrich; and Wiechert, Rudolf, 4,361,578, Cl. 424-285.000.
Kern, John W.; Spann, Michael M.; and Hoyer, Wilmer A., to Exxon Production Research Co. Dielectric constant well logging with current and voltage electrodes. 4,361,808, Cl. 324-366.000.
Kerr-McGee Corporation: *See*—
Trowsdale, Larry S., 4,361,192, Cl. 175-45.000.
Khomyakov, Anatoly V.: *See*—
Dukhovskoi, Evgeny A.; Kleiman, Alexandr M.; Ponomarev, Ardalion N.; Silin, Askold A.; Skok, Valentina M.; Talroze, Viktor L.; and Khomyakov, Anatoly V., 4,361,596, Cl. 427-41.000.
Khoudari, Benjamin M., to Ontel Corporation. Manchester decoder. 4,361,895, Cl. 375-87.000.
Kiefer, John E., to Eastman Kodak Company. Hydrophilic substrate for sorbing heavy metals. 4,361,493, Cl. 252-184.000.
Kikuchi, Hideo; and Kaneko, Tamaki, to Ricoh Company, Ltd. Sheet distribution method and apparatus. 4,361,320, Cl. 271-288.000.
Kikuchi, Hideo: *See*—
Ikeda, Sunao; Kaneko, Tamaki; Hibi, Kunio; Okuzawa, Tugio; Kakitani, Yohtaro; and Kikuchi, Hideo, 4,361,319, Cl. 271-209.000.
Kikuchi, Makoto; Chino, Koichi; Kawamura, Fumio; and Yusa, Hideo, to Hitachi, Ltd. Process for treating radioactive waste. 4,361,505, Cl. 252-628.000.
Kilham, Peter. Window bird feeder. 4,361,116, Cl. 119-51.00R.
Killin, Jeffrey R.: *See*—
Prikkel, John, III; Booher, Dale R.; and Killin, Jeffrey R., 4,361,272, Cl. 236-1.00G.
Killy, Earl J., to Manville Service Corporation. Coated paperboard food package. 4,361,266, Cl. 229-32.000.
Kilsdonk, Harley; Linde, Frits; and Schippers, Petrus L., to Akzona, Incorporated. Device for filtering a liquid and a spinning assembly provided with such a filter. 4,361,489, Cl. 210-780.000.
Kim, Han J.; Peters, Thomas E.; and Gustafson, John, to GTE Laboratories Incorporated. Method for selecting an additive for electrical contacts. 4,361,033, Cl. 73-64.400.
Kimball International Inc.: *See*—
Wilcox, Brian N.; and Robinson, John W., 4,361,065, Cl. 84-1.030.
Kimberly-Clark Corporation: *See*—
Weber, Robert E.; and Borovsky, Joseph, 4,361,632, Cl. 429-145.000.
Kimura, Akio: *See*—
Suzuki, Togi; Tsunawaki, Kiyokazu; Wada, Osamu; and Kimura, Akio, 4,361,617, Cl. 428-224.000.
Kimura Bed Mfg. Company Limited: *See*—
Kimura, Ryusuke; Saito, Shuichi; and Ishii, Kenshun, 4,360,933, Cl. 4-301.000.
Kimura, Ryusuke; Saito, Shuichi; and Ishii, Kenshun, to Kimura Bed Mfg. Company Limited. Urine suction and collection device for a vacuum suction type urinating aid. 4,360,933, Cl. 4-301.000.
Kinderman, Gerard H.; and Sanders, James F., to Minnesota Mining and Manufacturing Company. Photolithographic element containing a silver-receptive polyaldehyde-containing receiving layer. 4,361,635, Cl. 430-14.000.
King, George W.; and Fenwick, Peter, to Canadian Stackpole Limited. Speed control system for bottling line. 4,361,759, Cl. 250-223.00R.
King, Johnnie L. Safety alarm device. 4,361,834, Cl. 340-575.000.
King Tester Corporation: *See*—
Borgersen, Roland D., deceased; Mullen, James G.; and Lineberger, James W., 4,361,034, Cl. 73-81.000.
Kinoshita, Kunio, to Olympus Optical Company Ltd. Ventilation/feed-water switching apparatus for endoscope. 4,361,138, Cl. 128-4.000.
Kinson, Robert, to Murnieks, Juris. Torque converter. 4,361,055, Cl. 74-5.220.
Kirby, William E.; and Seymour, David J., to Wharton Shipping Corporation, by said D. J. Seymour, a part interest. Barge-carrying vessel. 4,361,105, Cl. 114-260.000.
Kirkendall, Richard D.: *See*—
Burns, Bruce P.; and Kirkendall, Richard D., 4,360,954, Cl. 29-1.230.
Kishi, Akira: *See*—
Minematsu, Hiroyuki; Matsumoto, Kojiro; Saeki, Tadashi; and Kishi, Akira, 4,361,684, Cl. 526-87.000.
Kishi, Takao: *See*—
Saito, Tadao; Kishi, Takao; and Kakuta, Yoshiyuki, 4,361,255, Cl. 222-321.000.
Kishima, Yukihiro: *See*—
Kitamura, Masatsugu; Onoye, Hideo; Ono, Tsuyoshi; Ohno, Fumiaki; Kishima, Yukihiro; and Morita, Yutaka, 4,361,880, Cl. 369-33.000.
Kitamura, Masatsugu; Onoye, Hideo; Ono, Tsuyoshi; Ohno, Fumiaki; Kishima, Yukihiro; and Morita, Yutaka, to Victor Company of Japan, Limited. Programmable automatic record player. 4,361,880, Cl. 369-33.000.
Kiyota, Yuhiko: *See*—
Hori, Kenji; Kiyota, Yuhiko; and Akishino, Katsuo, 4,361,123, Cl. 123-308.000.
Klaiber, George S.: *See*—
Grajek, Stanley A.; Hill, Robert S.; and Klaiber, George S., 4,361,458, Cl. 156-264.000.
Kleiman, Alexandr M.: *See*—
Dukhovskoi, Evgeny A.; Kleiman, Alexandr M.; Ponomarev, Ardalion N.; Silin, Askold A.; Skok, Valentina M.; Talroze, Viktor L.; and Khomyakov, Anatoly V., 4,361,596, Cl. 427-41.000.
Klein, Friedrich, to J. D. Moller Optische Werke GmbH, Firma. Surgery microscope with cut-through form lens with a light barrier. 4,361,379, Cl. 350-91.000.
Klein, Robert R.: *See*—
Lundberg, Robert D.; O'Brien, Dennis E.; Makowski, Henry S., deceased; and Klein, Robert R., 4,361,658, Cl. 523-132.000.
Kliegman, Jonathan M.: *See*—
McCarthy, Robert F.; and Kliegman, Jonathan M., 4,361,436, Cl. 71-86.000.
Klingler, Friedrich; and Makosch, Manfred, to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft. Selective intermittent lifter and film inking system for printing machines. 4,361,090, Cl. 101-352.000.
KLM Company, The: *See*—
Keeler, Frederick D.; and Ellis, Carleton, Jr., 4,361,457, Cl. 156-224.000.
Kloeber, Peter, to Siemens Aktiengesellschaft. Circuit arrangement for clock pulse recovery at the receiving end of digital clock-controlled data transmission systems. 4,361,897, Cl. 375-110.000.
Knackstedt, Wilhelm: *See*—
Beckmann, Rolf; and Knackstedt, Wilhelm, 4,361,625, Cl. 428-412.000.
Knapp, Heinrich; Lembke, Manfred; Linssen, Mathias; Peczkowski, Jurgen; and Hoppel, Rainer, to Robert Bosch GmbH. Fuel injection valve. 4,361,126, Cl. 123-585.000.
Knapp, Rudolf: *See*—
Teetz, Volker; Uhmann, Rainer; and Knapp, Rudolf, 4,361,482, Cl. 210-198.200.
Kneipp, Kenneth G.: *See*—
Stofko, John J., Jr.; Kneipp, Kenneth G.; and Sonnonstine, Terry J., 4,361,637, Cl. 430-58.000.
Kobayashi, Hideo: *See*—
Isobe, Yukihiro; Okuyama, Kiyotaka; Hosaka, Akihiko; and Kobayashi, Hideo, 4,361,621, Cl. 428-329.000.
Kobayashi, Hirotsugi: *See*—
Harata, Shoichi; and Kobayashi, Hirotsugi, 4,361,739, Cl. 200-16.00C.
Kobayashi, Masahiro: *See*—
Suzuki, Yoshitsugu; Iizuka, Syogo; Kajiyama, Shigeo; Usui, Kenji; and Kobayashi, Masahiro, 4,360,962, Cl. 29-564.400.
Kobayashi, Taiki: *See*—
Isobe, Susumu; Nakajima, Hajime; Kondo, Tatsuo; Watanabe, Katsutoshi; Ishida, Yasukazu; Okada, Takeshi; and Kobayashi, Taiki, 4,361,443, Cl. 75-128.00W.
Kobayashi, Takashi, to Yamaha Hatsudoki Kabushiki Kaisha. Steering ski suspension for snowmobiles. 4,361,339, Cl. 280-21.00R.
Kobinger, Walter: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; Pichler, Ludwig; Hoefke, Wolfgang; and Gaida, Wolfram, 4,361,575, Cl. 424-273.00R.
Koch, Robert C.: *See*—
Davis, James A.; and Koch, Robert C., 4,361,607, Cl. 428-35.000.
Kochera, Peter G., to Sigan, John, a part interest. Handlebar adjusting device. 4,361,057, Cl. 74-551.400.
Kohler, Marcel, to Balzers Aktiengesellschaft fur Hochvakuumtechnic und Dunne Schichten. Seal for vacuum flange connections. 4,361,331, Cl. 277-1.000.
Koiso, Junichi: *See*—
Iwai, Fumio; Koiso, Junichi; Hirabayashi, Tsugio; and Ura, Hiroaki, 4,360,944, Cl. 15-256.510.
Kojima, Yoshikazu; and Kamiya, Masaaki, to Kabushiki Kaisha Daini Seikosha. Constant current circuit. 4,361,797, Cl. 323-316.000.
Kokenge, Elmer J.; Carlson, C. William; Backscheider, F. A.; and Campbell, William M., to Schulte Corporation. Shelf apparatus. 4,361,099, Cl. 108-152.000.
Kokes, Ivan J. Golf club grip pad. 4,361,326, Cl. 273-81.00D.
Kokhanov, Georgy N.: *See*—
Kubasov, Vladimir L.; Jurkov, Leonid I.; Busse-Machukas, Vladimir B.; Kokhanov, Georgy N.; and Lvovich, Florenty I., 4,361,603, Cl. 427-126.500.
Kollie, Thomas G.: *See*—
Anderson, Robert C.; Jones, Jack M.; and Kollie, Thomas G., 4,361,447, Cl. 148-11.50F.
Kondo, Naoki: *See*—
Kashiwagi, Yoshiyuki; Tanigaki, Shuzo; Kondo, Naoki; and Suzuki, Tsutae, 4,361,742, Cl. 200-144.00B.
Kondo, Tatsuo: *See*—
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Kondo, Toshiro: *See*—
Kanada, Eiji; Kondo, Toshiro; and Yamada, Shoji, 4,361,639, Cl. 430-204.000.

Kongs, David J.: *See*—
Landoll, Donald R.; and Kongs, David J., 4,361,191, Cl. 172-146.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Iwai, Fumio; Koiso, Junichi; Hirabayashi, Tsugio; and Ura, Hiroaki, 4,360,944, Cl. 15-256.510.
Katakura, Hiroshi; and Arai, Tomio, 4,361,397, Cl. 355-15.000.
Uchida, Tohru, 4,361,396, Cl. 355-15.000.

Koontz, Harry S., to PPG Industries, Inc. Method of and apparatus for selectively heating molten glass stream marginal edges. 4,361,430, Cl. 65-99.500.

Koppe, Herbert: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; Pichler, Ludwig; Hoefke, Wolfgang; and Gaida, Wolfram, 4,361,575, Cl. 424-273.00R.

Koppehele, Hugh P.; and Gardner, James J., to Fluid Kinetics, Inc. Mixing nozzle. 4,361,285, Cl. 239-424.000.

Korfmann, Werner: *See*—
Christensen, Hans; Schlager, Paul; and Korfmann, Werner, 4,361,079, Cl. 98-50.000.

Korodi, Miklos B.: *See*—
Barber, Tommie L.; Korodi, Miklos B.; Davis, Steven J.; Schuldt, David A.; Christenson, Paul E.; Towse, Andrew C.; Jones, Donald S.; and Roh, David J., 4,361,730, Cl. 179-5.00R.

Koroyasu, Arata; and Takenaka, Hiroshi, to Kabushiki Kaisha Nihon Gijutsu Center. Carpet stretcher device. 4,361,311, Cl. 254-200.000.

Kosarek, Louis J. Electrolytic swimming pool chlorination. 4,361,471, Cl. 204-128.000.

Kosh, William S.: *See*—
Wetterhorn, Richard H.; and Kosh, William S., 4,361,046, Cl. 73-711.000.

Kotani, Makoto: *See*—
Kawamata, Motoo; Ohshima, Kazushi; Onofusa, Mitsuo; Kudoh, Akihide; Kotani, Makoto; and Tsuda, Takeshi, 4,361,709, Cl. 568-804.000.

Kraft, Joseph K., to Westinghouse Electric Corp. Drive chain. 4,361,220, Cl. 198-330.000.

Krakauer, Lawrence J., to Kronos, Incorporated. Process and apparatus for time card preparation and utilization and the like. 4,361,092, Cl. 101-426.000.

Kramer, Friedrich: *See*—
Reeh, Kurt; Jerofke, Hans-Christoph; and Kramer, Friedrich, 4,361,336, Cl. 277-207.00A.

Kramholler, Richard; Lobe, Hartwig; and Meyer, Wolfgang, to Bayerische Motoren Werke AG. Device for the turn indicator blinker lights of a motor vehicle, especially of a motorcycle. 4,361,829, Cl. 340-134.000.

Krass, Allen M.: *See*—
Levine, Michael R.; and Krass, Allen M., 4,361,273, Cl. 236-11.000.

Kritzer, Richard W. Method of making heat exchangers. 4,360,958, Cl. 29-157.30R.

Kronogard, Sven-Olof. Vehicle transmission. 4,361,059, Cl. 74-759.000.

Kronos, Incorporated: *See*—
Krakauer, Lawrence J., 4,361,092, Cl. 101-426.000.

Kronseder, Hermann. Labeling device for bottles and the like. 4,361,460, Cl. 156-568.000.

Krueger, Duane A.; and Odorzynski, Thomas W., to American Can Company. Coextruded film of polypropylene, polypropylene blend, and nylon. 4,361,628, Cl. 428-475.800.

Krug, Charles C., to K & S Industries, Inc. Snow thrower impeller. 4,360,983, Cl. 37-233.000.

Krumm, Heinz-Gerhard; Wulf, Peter; and Guhne, Wieland, to Vorwerk & Co. Interholding GmbH. Floor care device. 4,360,939, Cl. 15-49.00C.

Kubasov, Vladimir L.; Jurkov, Leonid I.; Busse-Machukas, Vladimir B.; Kokhanov, Georgy N.; and Lvovich, Florenty I. Electrode for electrochemical processes and production method therefor. 4,361,603, Cl. 427-126.500.

Kubin, Johann; Peer, Hermann; and Sodeck, Gottfried, to Voest-Alpine Aktiengesellschaft. Greenhouse. 4,360,989, Cl. 47-65.000.

Kubota, Ltd.: *See*—
Tokita, Yoshihiro, 4,361,118, Cl. 123-41.150.

Kuchenbecker, Hans J. L.: *See*—
Kuchenbecker, Heinz; Kuchenbecker, Hans J. L.; and Kuchenbecker, Rolf, 4,361,338, Cl. 280-1.11R.

Kuchenbecker, Heinz; Kuchenbecker, Hans J. L.; and Kuchenbecker, Rolf. Toy car with pedal drive. 4,361,338, Cl. 280-1.11R.

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Kueny, Kenneth E., to Sealed Power Corporation. Roller tappet and method of making same. 4,361,120, Cl. 123-90.550.

Kuether, Siegfried, to Kuether, Siegfried. Tube end forging process. 4,361,360, Cl. 301-127.000.

Kukacka, Lawrence E.: *See*—
Sugama, Toshifumi; Kukacka, Lawrence E.; and Horn, William H., 4,361,670, Cl. 524-811.000.

Kulicke, Frederick W., Jr.: *See*—
Elles, Richard J.; Kulicke, Frederick W., Jr.; Sade, Moshe E.; and Soffa, Albert, 4,361,261, Cl. 228-103.000.

Kulicke & Soffa Industries, Inc.: *See*—
Elles, Richard J.; Kulicke, Frederick W., Jr.; Sade, Moshe E.; and Soffa, Albert, 4,361,261, Cl. 228-103.000.

Kumandan, Krishna R. Size grader for pod vegetables. 4,361,239, Cl. 209-626.000.

Kummer, Werner: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; Pichler, Ludwig; Hoefke, Wolfgang; and Gaida, Wolfram, 4,361,575, Cl. 424-273.00R.

Kundig, Jurg: *See*—
Schafer, Paul; Mayer, Fritz; and Kundig, Jurg, 4,361,611, Cl. 428-96.000.

Kung, Patrick C.; and Goldstein, Gideon, to Ortho Pharmaceutical Corporation. Complement-fixing monoclonal antibody to human T cells, and methods of preparing same. 4,361,549, Cl. 424-85.000.

Kung, Patrick C.; and Goldstein, Gideon, to Ortho Pharmaceutical Corporation. Complement-fixing monoclonal antibody to human suppressor T cells and methods of preparing same. 4,361,550, Cl. 424-85.000.

Kunze, Dieter; and Bauer, Josef, to Siemens Aktiengesellschaft. Sleeve head for closing the ends of a cable sleeve. 4,361,722, Cl. 174-93.000.

Kupperman, David S.; and Reimann, Karl J., to United States of America, Energy. Scanning ultrasonic probe. 4,361,044, Cl. 73-623.000.

Kurchacova, Elva: *See*—
Van Dyke, John W., Jr.; and Kurchacova, Elva, 4,361,566, Cl. 424-256.000.

Kurihara, Hiroshi; and Katoh, Tadayoshi, to Fujitsu Limited. Band-pass filter circuit. 4,361,894, Cl. 375-80.000.

Kurita, Toshiaki; and Mizunuma, Masanori, to Tomy Kogyo Company, Inc. Toy having a split movable member. 4,361,327, Cl. 273-119.00R.

Kuroha, Hiroaki: *See*—
Shima, Seiya; Kuroha, Hiroaki; Ando, Takeki; Kurosawa, Toshiaki; Inaba, Hiromi; and Sakai, Yoshio, 4,361,866, Cl. 363-129.000.

Kurosawa, Toshiaki: *See*—
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Kurshan, Robert P.: *See*—
Hertz, David; Kurshan, Robert P.; and Malah, David, 4,361,875, Cl. 364-724.000.

Kurtz, Rudiger: *See*—
Bubik, Alfred; Dahl, Hans; and Kurtz, Rudiger, 4,361,467, Cl. 162-336.000.

Kushner, Burton A.; and Jirinec, Michael J., to Eutectic Corporation. Flame spray powder. 4,361,604, Cl. 427-423.000.

L. & C. Steinmuller GmbH: *See*—
Michalak, Stanislaw, 4,361,182, Cl. 165-10.000.

Lack, Peter: *See*—
Frister, Manfred; Renner, Stefan; Meyer, Friedhelm; and Lack, Peter, 4,361,867, Cl. 363-145.000.

Ladney, Michael, Jr.: *See*—
Foster, Edwin E.; and Foster, Thomas E., 4,361,025, Cl. 72-381.000.

Laesser, Claude; Zafferri, Roberto; and Depery, Jean, to Ebauches S.A. Electromagnetic motor rotatable in either direction. 4,361,790, Cl. 318-696.000.

Lambert, Thomas W.: *See*—
Daniels, Herbert E.; Bernstein, Frank; Lambert, Thomas W.; and Pelc, Norbert J., 4,361,901, Cl. 378-106.000.

Lambrecht, Roger: *See*—
Georget, Jean-Pierre; and Lambrecht, Roger, 4,361,289, Cl. 241-32.000.

Landau, Uziel: *See*—
Angus, John C.; Tomaswick, Kathleen M.; and Landau, Uziel, 4,361,641, Cl. 430-313.000.

Landis, Delmer H., Jr.; and Lawrence, Malachi, Jr., to General Electric Company. Vibration damper ring. 4,361,213, Cl. 188-378.000.

Landoll Corporation: *See*—
Landoll, Donald R.; and Kongs, David J., 4,361,191, Cl. 172-146.000.

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Lane, Thomas A.; and Webb, David M., to Control Data Corporation. Degradable LRU circuit. 4,361,878, Cl. 364-900.000.

Langer, Arthur W.; Steger, John J.; and Burkhardt, Terry J., to Exxon Research and Engineering Co. Preparation of linear olefin products. 4,361,714, Cl. 585-521.000.

Langseder, Neal; and Stein, Friedrich, to American Can Company. Detachment resistant retained lever tab. 4,361,251, Cl. 220-269.000.

Lanphear, Marvin P. Chain-link construction for elongated structural components. 4,361,303, Cl. 248-188.100.

Lapp-Emden, Helmut. Process and apparatus for the singling of the sheets of a paper stack. 4,361,317, Cl. 271-3.100.

Laprie, Marc: *See*—
de Montgolfier, Arnaud; and Laprie, Marc, 4,361,766, Cl. 307-3.000.

Large, Donald M.: *See*—
Herman, Carl H.; Johnson, Anderson F., Jr.; Large, Donald M.; and Tamashasky, Joseph A., 4,360,995, Cl. 53-437.000.

Larion, Lois J.: *See*—
Peck, Susanne M.; Larion, Lois J.; and Rowe, Englebert L., 4,361,580, Cl. 424-287.000.

Larson, David V.: *See*—
Hall, Leslie G.; Larson, David V.; Smith, Michael A.; and Wood, Stuart K., 4,361,296, Cl. 244-54.000.

Larson, Duane B., to Bethlehem Steel Corporation. Adaptive control for a dividing shear. 4,361,063, Cl. 83-71.000.

Larsson, Lars-Ake L.; Naucler, Lars O. V.; and Nylen, Ulf T. G., to Gambro AB. Process for treating and/or removal of substances from liquid, especially whole blood. 4,361,484, Cl. 210-632.000.

Lass, John L., to Square D Company. Cable clamp for electrical outlet box. 4,361,302, Cl. 248-56.000.

Latsch, Reinhard, to Robert Bosch GmbH. Internal combustion engine with externally-supplied ignition, having one main combustion chamber per cylinder and one ignition chamber. 4,361,122, Cl. 123-266.000.

Lauer, Hansjorg: *See*—
Wolf, Franz J.; and Lauer, Hansjorg, 4,361,349, Cl. 285-110.000.

Laut, Bernhard: *See*—
Friedemann, Wolfgang; and Laut, Bernhard, 4,361,659, Cl. 523-220.000.

Lavery, John J., to Champion International Corporation. Carton for mailing and storage of checks. 4,361,236, Cl. 206-611.000.

Lawrence, Carl; Hall, Alan J.; and Inverarity, George, to British Industrial Plastics Limited. Amino fibres. 4,361,674, Cl. 525-58.000.

Lawrence, Malachi, Jr.: *See*—
Landis, Delmer H., Jr.; and Lawrence, Malachi, Jr., 4,361,213, Cl. 188-378.000.

Lawson, David F., to Firestone Tire & Rubber Company, The. Polmers having reduced carbon monoxide generation upon burning. 4,361,668, Cl. 524-398.000.

Layton, Larry L.: *See*—
Wauters, Ronald P.; Kenyon, Ralph E.; Sarma, Monoj K.; Layton, Larry L.; Swanson, Wade H.; and Hibler, Diane E., 4,361,589, Cl. 426-270.000.

Leanna, Dale D.: *See*—
Wittkopf, Eugene W.; and Leanna, Dale D., 4,361,089, Cl. 101-182.000.

Lear Siegler, Inc.: *See*—
Bowman, Clyde, 4,361,224, Cl. 198-781.000.
Saur, Charles W., 4,361,225, Cl. 198-781.000.

Lee, Nancy M.: *See*—
Loh, Horace H.; and Lee, Nancy M., 4,361,553, Cl. 424-177.000.

Lee, Raymond: *See*—
Gagliani, John; Lee, Raymond; and Wilcoxson, Anthony L., 4,361,453, Cl. 156-79.000.

Legros, Jean: *See*—
Margetts, George; Andrews, Roderic S.; and Legros, Jean, 4,361,703, Cl. 560-142.000.

Leipold & Eppich KG: *See*—
Theisen, Gunter; Eppich, Alfred; and Hochleitner, Rudolf H., 4,361,622, Cl. 428-363.000.

Leitheiser, Robert H.: *See*—
Bogner, Ben R.; Bozer, Keith B.; Dunlop, William R.; and Leitheiser, Robert H., 4,361,613, Cl. 428-119.000.

Le Marouille, Martine: *See*—
Poignet, Alain; Fournier, Claude; and Le Marouille, Martine, 4,361,848, Cl. 358-1.000.

Lembke, Manfred: *See*—
Knapp, Heinrich; Lembke, Manfred; Linssen, Mathias; Peczkowski, Jurgen; and Hoppel, Rainer, 4,361,126, Cl. 123-585.000.

Leoncini, Novello: *See*—
Benai, Tommaso; Paoletti, Ugo; and Leoncini, Novello, 4,361,532, Cl. 264-188.000.

Leopardi, Stefania, to Industrie Ottiche Riunite S.p.A. Method for sterilizing contact lenses. 4,361,536, Cl. 422-33.000.

Lesher, George Y.; and Gruett, Monte D., to Sterling Drug Inc. 5-(Pyridinyl)-1H-pyrazolo[3,4-b]pyridin-3-amines and their cardiotonic use. 4,361,568, Cl. 424-263.000.

Lesher, George Y.; and Philion, Richard E., to Sterling Drug Inc. 3-(Hydroxy or hydroxymethyl)-6-methyl-5-(4-pyridinyl)-2(1H)-pyridinone and cardiotonic use thereof. 4,361,569, Cl. 424-263.000.

Leskoverc, Edward V.; and Schwehr, Richard A., to Towmotor Corporation. Switch actuator apparatus. 4,361,741, Cl. 200-85.00A.

Lessmeister, Peter: *See*—
Streitberger, Hans-Joachim; Lessmeister, Peter; and Zdahl, Norbert, 4,361,660, Cl. 523-404.000.

Lesnig, Werner; Metz, Gunter; Spiegel, Willi; Faust, Manfred; and Junkers, Gunter, to Agfa-Gevaert Aktiengesellschaft. Apparatus for measuring surface tension. 4,361,032, Cl. 73-64.400.

L'Etat Francais: *See*—
Poignet, Alain; Fournier, Claude; and Le Marouille, Martine, 4,361,848, Cl. 358-1.000.

Levenson, Sol J. Engine analyzer. 4,361,036, Cl. 73-116.000.

Lever Brothers Company: *See*—
Duff, Alan J.; and Segers, Jacobus C., 4,361,517, Cl. 260-412.500.

Levine, Michael R.; and Krass, Allen M. Electronic humidity control. 4,361,273, Cl. 236-11.000.

Lew, William D.: *See*—
Lewis, Jack L.; Patrnchak, Carl M.; Lew, William D.; and Shybut, George T., 4,361,142, Cl. 128-80.00C.

Lewis, Jack L.; Patrnchak, Carl M.; Lew, William D.; and Shybut, George T., to Northwestern University. Knee orthosis and joint construction therefor. 4,361,142, Cl. 128-80.00C.

Lewis, Robert H.: *See*—
Bil, Ronald J.; and Lewis, Robert H., 4,361,809, Cl. 324-426.000.

Lewis, Willie J.: *See*—
Shackleford, John E.; and Lewis, Willie J., 4,361,148, Cl. 128-214.00D.

Leyland, Billy M. Air cooling apparatus. 4,361,525, Cl. 261-152.000.

LGZ Landis & Gyr Zug AG: *See*—
Spalti, Alfred, 4,361,872, Cl. 364-483.000.

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Malinowski, Christopher W.; and Rinderle, Heinz, 4,361,837, Cl. 340-825.720.

Liggett Group Inc.: *See*—
Hall, Floyd V., 4,361,156, Cl. 131-90.000.

Lillie, Christian: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; Pichler, Ludwig; Hoefke, Wolfgang; and Gaida, Wolfram, 4,361,575, Cl. 424-273.00R.

Lin, An-Chung R.: *See*—
Cooke, Theodore M.; Whitfield, Richard G.; and Lin, An-Chung R., 4,361,843, Cl. 346-1.100.

Lindberg, Erik A. S.; and Ljungqvist, Karl-Johan, to Billerud Uddeholm Aktiebolag. Method in the production of dissolving pulp. 4,361,463, Cl. 162-9.000.

Linde Aktiengesellschaft: *See*—
Gengler, Hans; Schwab, Wolfgang; Wall, Fraser; and Bailey, Thomas, 4,361,478, Cl. 208-130.000.

Linde, Frits: *See*—
Kilsdonk, Harley; Linde, Frits; and Schippers, Petrus L., 4,361,489, Cl. 210-780.000.

Lindenthal, Hans, to Voith Getriebe KG. Hydrodynamic brake. 4,361,211, Cl. 188-296.000.

Lineberger, James W.: *See*—
Borgersen, Roland D., deceased; Mullen, James G.; and Lineberger, James W., 4,361,034, Cl. 73-81.000.

Linker, Joe B., Jr.: *See*—
Etherington, Ralph; and Linker, Joe B., Jr., 4,361,905, Cl. 455-80.000.

Linssen, Mathias: *See*—
Knapp, Heinrich; Lembke, Manfred; Linssen, Mathias; Peczkowski, Jurgen; and Hoppel, Rainer, 4,361,126, Cl. 123-585.000.

Livesay, Richard E., to Caterpillar Tractor Co. Idler-roller recoil device. 4,361,363, Cl. 305-22.000.

Ljungqvist, Karl-Johan: *See*—
Lindberg, Erik A. S.; and Ljungqvist, Karl-Johan, 4,361,463, Cl. 162-9.000.

Lloyd, Samuel H., III; and Goren, Yoram, to Santa Fe International Corporation. Twin hull semisubmersible derrick barge. 4,361,104, Cl. 114-258.000.

Lo, Young S.: *See*—
Sheehan, John C.; and Lo, Young S., 4,361,514, Cl. 260-245.20R.

Lobe, Hartwig: *See*—
Kramholler, Richard; Lobe, Hartwig; and Meyer, Wolfgang, 4,361,829, Cl. 340-134.000.

Lobeck, Walter G., Jr.: *See*—
Temple, Davis L., Jr.; Yevich, Joseph P.; and Lobeck, Walter G., Jr., 4,361,565, Cl. 424-250.000.

Lobenstein, Helmut; and Quick, Marshall K., to General Electric Company. Spread spectrum signal estimator. 4,361,891, Cl. 375-1.000.

Locatelli, Jena-Louis, to Rhone-Poulenc Industries. Novel imido/hydroxylate organosilicon copolymers. 4,361,690, Cl. 528-21.000.

Lockner, Peter P.: *See*—
Monks, David E.; and Lockner, Peter P., 4,361,389, Cl. 354-139.000.

Logan, Clinton M.; and Garibaldi, Jack L., to United States of America, Energy. Rotatable seal assembly. 4,361,332, Cl. 277-3.000.

Loggins, Ted C., Jr.; Selberg, John P.; and Rapmund, Rudolf W., to Allis-Chalmers Corporation. Apparatus for mixing salvaged asphalt material. 4,361,406, Cl. 366-25.000.

Login, Robert B.: *See*—
Newkirk, David D.; Login, Robert B.; and Thir, Basil, 4,361,623, Cl. 428-394.000.

Loh, Horace H.; and Lee, Nancy M., to University of California, Regents of the. Therapeutic uses of dynorphin. 4,361,553, Cl. 424-177.000.

Long, Edward M.; and Wickersham, Ronald J. Pressure recording process and device. 4,361,736, Cl. 179-121.00R.

Loos, Hendricus G. Multiple wavelength instrument for measurement of particle size distributions. 4,361,403, Cl. 356-336.000.

Loper, Bernd: *See*—
Binnewies, Hartmut; and Loper, Bernd, 4,361,359, Cl. 301-37.0PB.

Lord, David E.: *See*—
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Lord, Herbert A., to Western Electric Co., Inc. Uniformly cooled plasma etching electrode. 4,361,749, Cl. 219-121.0PD.

L'Oreal: *See*—
Bugaut, Andree; and Jeanminet, Ginette, 4,361,421, Cl. 8-407.000.

Lovey, Raymond G.: *See*—
Bristol, James A.; and Lovey, Raymond G., 4,361,567, Cl. 424-256.000.

Lowder, James. Gnat trap. 4,360,987, Cl. 43-122.000.

Lucas Industries Limited: *See*—
Harris, Alan L., 4,361,346, Cl. 280-707.000.

Luers, Thomas J., to Halliburton Company. Downhole mixing valve. 4,361,187, Cl. 166-326.000.

Luetzelschwab, Wayne E., to Marathon Oil Company. Refinement of sulfonated hydrocarbons. 4,361,520, Cl. 260-505.00P.

Luff, Martin; and Skoda, William G., to Motorola, Inc. Universal piezoelectric crystal holder. 4,361,778, Cl. 310-348.000.

Luijpers, Johannes G. T., to Gould Godart B.V. Gas analyzer. 4,361,802, Cl. 324-65.00R.

Luitz, Max, to ESS GmbH & Co., Firma. Ski brake. 4,361,343, Cl. 280-605.000.

Lundberg, Robert D.; O'Brien, Dennis E.; Makowski, Henry S., deceased (by Makowski, Patricia H., executrix); and Klein, Robert R., to Exxon Research and Engineering Co. Process for polymeric gelation. 4,361,658, Cl. 523-132.000.

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Lutz, Michael A., to Raychem Corporation. Over-temperature sense and locate device. 4,361,799, Cl. 324-52.000.

Lutz, Stephen S.: *See*—
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Luwa AG: *See*—
Gasser, Hermann; Curiger, Karl; and Novak, Peter, 4,361,006, Cl. 57-304.000.

Luzzi, Glenn J.; and Cole, James E., Jr., to Amerace Corporation. Assembly tool for electrical connectors. 4,360,967, Cl. 29-758.000.

Lvovich, Florenty I.: *See*—
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Nicol, Robert W.; Gottschall, Martin; and Lyman, Geoffrey, 4,361,052, Cl. 73-863.000.

M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft: *See*—
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Maahs, Gunther: *See*—
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Mabie, Earl. Electrically heated windshield wiper assembly. 4,360,941, Cl. 15-250.060.

MacGregor, John R.: *See*—
Rupert, Gary F.; Kennedy, Thomas M.; and MacGregor, John R., 4,361,745, Cl. 219-69.00G.

Machida, Takayasu: *See*—
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MacIntyre, Robert W. Ski pole basket carrier system. 4,361,347, Cl. 280-814.000.

MacTaggart, John M.: *See*—
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Mages, Gert: *See*—
Urban, Gerd; Opitz, Heinrich; and Mages, Gert, 4,361,644, Cl. 430-422.000.

Magg, Alfred: *See*—
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Maglia, Andrew R., deceased (by Maglia, Concetta D., executrix), to Talaba, Mark; and Maglia, Angela S. Glass sheet shaping and trimming (grozing) tool and method of use. 4,361,130, Cl. 125-36.000.

Maglia, Angela S.: *See*—
Maglia, Andrew R., deceased, 4,361,130, Cl. 125-36.000.

Maglia, Concetta D., executrix: *See*—
Maglia, Andrew R., deceased, 4,361,130, Cl. 125-36.000.

Magna-Graphics Corporation: *See*—
Wittkopf, Eugene W.; and Leanna, Dale D., 4,361,089, Cl. 101-182.000.

Magnaflux Corporation: *See*—
Song, Sei H., 4,361,806, Cl. 324-216.000.

Magyar Tudomanyos Akademia Kosponti Hivatala: *See*—
Mathe, Tibor; Tungler, Antal; and Petro, Jozsef, 4,361,500, Cl. 252-430.000.

Majkrzak, Charles P.; and Phillips, Thomas R., to International Telephone and Telegraph Corporation. Connector panel for an electronic cabinet. 4,361,372, Cl. 339-64.00M.

Mak-Ard Industries, Incorporated: *See*—
Hubbard, James B.; and Makus, Thomas E., 4,360,990, Cl. 51-410.000.

Makimoto, Mitsuo: *See*—
Sagawa, Morikazu; Makimoto, Mitsuo; and Yamashita, Sadahiko, 4,361,820, Cl. 333-206.000.

Makosch, Manfred: *See*—
Klingler, Friedrich; and Makosch, Manfred, 4,361,090, Cl. 101-352.000.

Makowski, Henry S., deceased: *See*—
Lundberg, Robert D.; O'Brien, Dennis E.; Makowski, Henry S., deceased; and Klein, Robert R., 4,361,658, Cl. 523-132.000.

Makowski, Patricia H., executrix: *See*—
Lundberg, Robert D.; O'Brien, Dennis E.; Makowski, Henry S., deceased; and Klein, Robert R., 4,361,658, Cl. 523-132.000.

Makus, Thomas E.: *See*—
Hubbard, James B.; and Makus, Thomas E., 4,360,990, Cl. 51-410.000.

Malah, David: *See*—
Hertz, David; Kurshan, Robert P.; and Malah, David, 4,361,875, Cl. 364-724.000.

Malinowski, Christopher W.; and Rinderle, Heinz, to Licentia Patent-Verwaltungs-G.m.b.H. Remote control circuit employing frequency/direct signal converters. 4,361,837, Cl. 340-825.720.

Manville Service Corporation: *See*—
Killy, Earl J., 4,361,266, Cl. 229-32.000.

Marathon Oil Company: *See*—
Luetzelschwab, Wayne E., 4,361,520, Cl. 260-505.00P.

Marazzi, Silvio, to Diamond SA. Optical fiber coupling means having spiral air vent passage. 4,361,380, Cl. 350-96.210.

Marcelin, George; Vogel, Roger F.; and Swift, Harold E., to Gulf Research & Development Company. Process for hydrogenating unsaturated compounds. 4,361,705, Cl. 568-462.000.

Marconi Instruments Limited: *See*—
Arnold, Victor F., 4,361,804, Cl. 324-79.00R.

Marcus, Sanford M.; and Rellick, Joseph R., to Du Pont de Nemours, E. I., and Company. Silicon solar cell N-region metallizations comprising a nickel-antimony alloy. 4,361,718, Cl. 136-256.000.

Margetts, George; Andrews, Roderic S.; and Legros, Jean, to Sterling Drug Inc. Para-amino(or nitro)phenyl N-acetylaminothioalkanoates. 4,361,703, Cl. 560-142.000.

Margosian, Daniel: *See*—
Schulz, Johann G.; and Margosian, Daniel, 4,361,671, Cl. 524-879.000.

Marino, Vincent J. Dimensionally stable wood flooring. 4,360,992, Cl. 52-309.400.

Markert, Frank J.: *See*—
Carpenter, John R.; Cassanelli, Robert R.; and Markert, Frank J., 4,361,592, Cl. 426-579.000.

Marks, Michael R.: *See*—
Black, Richard I.; Ehrenfels, Alfred L.; and Marks, Michael R., 4,361,252, Cl. 220-344.000.

Marmillion, David J.; Schildkraut, Alan L.; and Gallusser, David O., to Bendix Corporation, The. Electrical connector bayonet coupling pin. 4,361,374, Cl. 339-90.00R.

Mars, Incorporated: *See*—
Van Dort, Klaas P., 4,361,218, Cl. 194-102.000.

Marsh, Walter H. W.; and Kahan, William, to Singer Company, The. Pocket button attaching device. 4,361,101, Cl. 112-110.000.

Marshall, Irl H., Jr.; and Bald, Paul R., to Duraclean International. Apparatus for cleaning floors and floor coverings. 4,360,946, Cl. 15-321.000.

Martin, Gary D., to Bell Telephone Laboratories, Incorporated. Adaptive equalizer. 4,361,892, Cl. 375-14.000.

Martin, Simon C., to Bristol Composite Materials Engineering Limited. Resin impregnator for filament wound pipe. 4,361,459, Cl. 156-425.000.

Martyniak, Gerald J., to Western Electric Company, Inc. Assemblies of electrical components with printed circuit boards, and printed circuit board structures therefor. 4,361,862, Cl. 361-404.000.

Marutake, Yozo; Fukutome, Tatsuro; Inaba, Yasuo; and Fukuyama, Kunihiko, to Rion Kabushiki Kaisha. Hard-of-hearing aid appliance. 4,361,733, Cl. 179-82.000.

Maruyama, Yutaka: *See*—
Munakata, Tomohiko; Tashiro, Chiaki; and Maruyama, Yutaka, 4,361,579, Cl. 424-287.000.

Marvin Glass & Associates: *See*—
Schoenfield, Palmer J.; and Disko, Harry, 4,360,988, Cl. 46-39.000.

Maryland Cup Corporation: *See*—
West, John B., 4,361,176, Cl. 141-362.000.

Maschinenfabrik Korfmann GmbH: *See*—
Christensen, Hans; Schlager, Paul; and Korfmann, Werner, 4,361,079, Cl. 98-50.000.

Massachusetts Institute of Technology: *See*—
Pratt, George W., Jr., 4,361,154, Cl. 128-660.000.
Sheehan, John C.; and Lo, Young S., 4,361,514, Cl. 260-245.20R.

Massey, Edward W.: *See*—
Hawes, Daniel D.; and Massey, Edward W., 4,361,234, Cl. 206-505.000.

Massey, John R., to Bell Telephone Laboratories, Incorporated. Splice case with tight sealing grommet. 4,361,721, Cl. 174-92.000.

Master Medical Corporation: *See*—
Aslanian, Jerry L.; and Numbers, Jody L., 4,361,147, Cl. 128-214.00E.

Mathe, Tibor; Tungler, Antal; and Petro, Jozsef, to Magyar Tudomanyos Akademia Kosponti Hivatala. Process for the preparation of supported metal catalysts. 4,361,500, Cl. 252-430.000.

Mathes, Nikolaus: *See*—
Gerlach, Klaus; Mathes, Nikolaus; and Wechs, Friedbert, 4,361,609, Cl. 428-90.000.

Matsufuji, Yohji: *See*—
Haruta, Masahiro; Matsufuji, Yohji; Yano, Yasuhiro; Ohta, Tokuya; and Eida, Tsuyoshi, 4,361,842, Cl. 346-1.100.

Matsumoto, Kojiro: *See*—
Minematsu, Hiroyuki; Matsumoto, Kojiro; Saeki, Tadashi; and Kishi, Akira, 4,361,684, Cl. 526-87.000.

Matsumura, Akira, to Nissan Motor Company, Limited. Method of testing transceiver and transceiver including testing apparatus. 4,361,904, Cl. 455-67.000.

Matsuno, Takashi: *See*—
Takaku, Sakae; Matsuura, Fumiaki; Mori, Takashi; Murakami, Yasushi; Kataoka, Shigeyuki; Takeda, Yasuhisa; Yamashita, Yasuhiro; Takeda, Yumiko; Matsuno, Takashi; Mizuno, Koji; Kaiho, Shinichi; Yamazaki, Tamotsu; Hata, Shun-ichi; and Takanashi, Shigeru, 4,361,572, Cl. 424-266.000.

Matsuoka, Kikuo: *See*—
Hirota, Kazumi; and Matsuoka, Kikuo, 4,361,020, Cl. 72-57.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Miyoshi, Keisuke; and Sumi, Kenshiro, 4,361,382, Cl. 350-126.000.
Okamoto, Hiroshi, 4,361,856, Cl. 360-64.000.
Sagawa, Morikazu; Makimoto, Mitsuo; and Yamashita, Sadahiko, 4,361,820, Cl. 333-206.000.
Sakai, Yukio; Yamazaki, Fumio; and Satoh, Isao, 4,361,394, Cl. 355-3.00R.

Sakamoto, Yoichi, 4,361,906, Cl. 455-140.000.
Tanabe, Kenzo, 4,361,728, Cl. 179-1.0GS.
Matsuura, Fumiaki: *See—*
Takaku, Sakae; Matsuura, Fumiaki; Mori, Takashi; Murakami, Yasushi; Kataoka, Shigeyuki; Takeda, Yasuhisa; Yamashita, Yasuhiro; Takeda, Yumiko; Matsuno, Takashi; Mizuno, Koji; Kaiho, Shinichi; Yamazaki, Tamotsu; Hata, Shun-ichi; and Takanashi, Shigeru, 4,361,572, Cl. 424-266.000.
Maund, Roderick A. Dyeing yarns. 4,361,019, Cl. 68-62.000.
Maurer, Herman J.; and Shumaker, John F., to J. I. Case Company. Bucket with removable cutting plate. 4,360,982, Cl. 37-141.00R.
Max Langenstein Feld- und Gartengerate GmbH & Co.: *See—*
Fellmann, Ruedi, 4,360,971, Cl. 30-296.00R.
Maxfield, Samuel W.: *See—*
Smith, David K.; Harlow, Nigel; and Maxfield, Samuel W., 4,361,080, Cl. 99-277.100.
Mayer, Edward F.; and Pfeuffer, Donald F., to Ricoh Company, Ltd. Developer crossmixing apparatus. 4,361,109, Cl. 118-655.000.
Mayer, Fritz: *See—*
Schafer, Paul; Mayer, Fritz; and Kundig, Jurg, 4,361,611, Cl. 428-96.000.
McCarthy, Robert F.; and Kliegman, Jonathan M., to GAF Corporation. Composition for plant growth regulation. 4,361,436, Cl. 71-86.000.
McClanahan, Buford A.; Udolf, Herb W.; Zander, Charles R.; and Thresher, Robert W., to Teledyne Industries, Inc. Spray strip pickling of upright material. 4,361,444, Cl. 134-3.000.
McCornack, Robert R., to Safe Automatic Flow Engineering, Inc. Flush valve construction. 4,361,168, Cl. 137-315.000.
McGregor, William H., to American Home Products Corporation. Polypeptide compositions. 4,361,673, Cl. 525-54.110.
McMahan, Robert K., Jr., to United States of America, Navy. Laser beam directional deviation and noise stabilization device. 4,361,383, Cl. 350-162.120.
McMaster, Harold A.; Nitschke, Norman C.; and Nitschke, John S. Apparatus and method for removing a glass sheet from a carrier. 4,361,432, Cl. 65-104.000.
McMullen, Raymond F.; and Wamstad, David B., to Honeywell Inc. Differential pressure to electrical signal transducer. 4,361,047, Cl. 73-721.000.
McMurtry, David R., to Rolls Royce Limited; and Renishaw Electrical Ltd. Probe for use in measuring apparatus. 4,360,973, Cl. 33-174.00L.
McVay, Robert D.; and Schaeufele, Herman J., to United McGill Corporation. Method and apparatus for forming angle ring flanges. 4,361,021, Cl. 72-71.000.
Mead Johnson & Company: *See—*
Temple, Davis L., Jr.; Yevich, Joseph P.; and Lobeck, Walter G., Jr., 4,361,565, Cl. 424-250.000.
Mead, Louis W.: *See—*
Deutsch, Marshall E.; and Mead, Louis W., 4,361,537, Cl. 422-56.000.
Mecalix: *See—*
de Cuissart, Jean D., 4,360,974, Cl. 33-180.00R.
Mechaneer, Inc.: *See—*
George, Robert D., 4,361,056, Cl. 74-25.000.
Mechanical Technology Incorporated: *See—*
Dineen, John J., 4,361,008, Cl. 60-521.000.
Meckel, Joachim; Joseph, Horst; and Wagener, Dietrich, to Didier Engineering GmbH. Dry cooling of coke. 4,360,976, Cl. 34-20.000.
Mediminder Development Ltd.: *See—*
Wirtschafter, Jonathan, 4,361,408, Cl. 368-10.000.
Meier, James, to Norlin Industries, Inc. Key-actuated switch. 4,361,738, Cl. 200-6.00R.
Meininger, Fritz: *See—*
Otten, Joachim W., deceased; Otten, Ursula, heir; Rudolph nee Otten, Anna G., heir; and Meininger, Fritz, 4,361,698, Cl. 544-211.000.
Meinke, Wilmon W. Vacuum enzymatic digestion of protein material. 4,361,586, Cl. 426-7.000.
Meiritz, Lothar: *See—*
Wedek, Rolf; and Meiritz, Lothar, 4,361,405, Cl. 366-7.000.
Melocik, Grant C., to Towmotor Corporation. Dual-motor drive circuit with high current switching. 4,361,788, Cl. 318-83.000.
Memminger, GmbH: *See—*
Fecker, Josef; and Memminger, Gustav, 4,361,292, Cl. 242-47.010.
Memminger, Gustav: *See—*
Fecker, Josef; and Memminger, Gustav, 4,361,292, Cl. 242-47.010.
Mercier, Gary M.; and Welch, Richard H., Jr., to Despatch Industries, Inc. Microwave process unit. 4,361,744, Cl. 219-10.55F.
Merck & Co., Inc.: *See—*
Rasmusson, Gary H.; and Tolman, Richard L., 4,361,699, Cl. 544-277.000.
Ratcliffe, Ronald W., 4,361,512, Cl. 260-245.20T.
Mericle, Robert W., to Ethicon, Inc. Cartridge for hemostatic clips. 4,361,229, Cl. 206-339.000.
Mertens, Alfred; and Schafer, Franz, to Didier Engineering GmbH. Flue housing for a coke oven. 4,361,468, Cl. 202-239.000.
Mesdan S.p.A.: *See—*
Bertoli, Luciano, 4,361,003, Cl. 57-22.000.
Messer Griesheim GmbH: *See—*
More, Anton, 4,361,449, Cl. 148-26.000.
Metallgesellschaft Aktiengesellschaft: *See—*
Bings, Hubert; Kampf, Fritz; Thome, Roland; Wargalla, Gerhard; Winkhaus, Gunter; Pietsch, Hartmut; Turke, Wolfgang; and Fischer, Peter, 4,361,541, Cl. 423-20.000.
Mettler, Hermann, to Fr. Mettler's Sohne Maschinenfabrik. Piezoelectric transducer for producing a signal depending on the tensile force of a textile thread. 4,361,777, Cl. 310-330.000.
Metz, Gunter: *See—*
Lessnig, Werner; Metz, Gunter; Spiegel, Willi; Faust, Manfred; and Junkers, Gunter, 4,361,032, Cl. 73-64.400.
Metz, Philip D., to United States of America, Energy. Cooperative heat transfer and ground coupled storage system. 4,361,135, Cl. 126-437.000.
Meyer, Friedhelm: *See—*
Frister, Manfred; Renner, Stefan; Meyer, Friedhelm; and Lack, Peter, 4,361,867, Cl. 363-145.000.
Meyer, Robert, to Commissariat A L'Energie Atomique. Electrolytic display cell. 4,361,386, Cl. 350-363.000.
Meyer, Wolfgang; and Schilz, Wolfram, to U.S. Philips Corporation. Microwave method for measuring the relative moisture content of an object. 4,361,801, Cl. 324-58.50R.
Meyer, Wolfgang: *See—*
Kramholler, Richard; Lobe, Hartwig; and Meyer, Wolfgang, 4,361,829, Cl. 340-134.000.
Meyers, Marion D.; and Stoner, Graham A., to Sandoz, Inc. Copper and amine based aquatic herbicides. 4,361,435, Cl. 71-66.000.
Michal, Vratislav M., to Eastman Kodak Company. Film transporting apparatus. 4,361,221, Cl. 198-459.000.
Michalak, Stanislaw, to L. & C. Steinmuller GmbH. Heat-transferring elements for regenerative heat exchange. 4,361,182, Cl. 165-10.000.
Michigan Instruments, Inc.: *See—*
Barkalow, Clare E., 4,361,140, Cl. 128-53.000.
Micro-Plate, Inc.: *See—*
Eidschun, Charles D., 4,361,470, Cl. 204-15.000.
Midwestern Industries, Inc.: *See—*
Davis, William F.; and Tsutsumi, Masataka, 4,361,240, Cl. 209-674.000.
Mierzejewski, Garret S. Apparatus for screen printing. 4,361,088, Cl. 101-124.000.
Miguel, Edward K.: *See—*
Hoskinson, William R.; and Miguel, Edward K., 4,361,754, Cl. 235-381.000.
Miklas, Frank C., to General Electric Company. Drip coffeemaker having a condenser eliminating delivery of steam to the water spreader. 4,361,750, Cl. 219-297.000.
Milberger, Ernest C.: *See—*
Blum, Patricia R.; Milberger, Ernest C.; Bremer, Noel J.; and Dria, Dennis E., 4,361,501, Cl. 252-435.000.
Miles Laboratories, Inc.: *See—*
Shuenn-tzong, Chen, 4,361,648, Cl. 435-10.000.
Van Dyke, John W., Jr.; and Kurchacova, Elva, 4,361,566, Cl. 424-256.000.
Miller, Jack V., to Acroform Corporation. Folding bow saw. 4,361,177, Cl. 145-33.00E.
Miller, Michael S., to Hoover Company, The. Cleaner motor with vibration isolation. 4,360,950, Cl. 15-412.000.
Miller, Robert, to NCR Corporation. Artwork master for production of multilayer circuit board. 4,361,634, Cl. 430-5.000.
Miller, Robert G.; and Phelps, Weldon L., to Caterpillar Tractor Co. Failsafe wheel slip control system and method of operating same. 4,361,871, Cl. 364-426.000.
Miller, Robert S.; Hoch, Samuel; and Ceprini, Mario Q., to Tenneco Chemicals, Inc. Heat-stable vinyl halide resin compositions and a process for their production. 4,361,665, Cl. 524-289.000.
Miller, Stephen J., to Chevron Research Company. Stabilizing and dewaxing lube oils. 4,361,477, Cl. 208-67.000.
Mills, Ned D., to Varitan, Inc. Variable positive displacement fluid motor/pump apparatus. 4,361,077, Cl. 91-500.000.
Minematsu, Hiroyuki; Matsumoto, Kojiro; Saeki, Tadashi; and Kishi, Akira, to Sumitomo Naugatuck Co., Ltd. Process for preparing copolymers comprising α-alkyl styrene and unsaturated nitrile. 4,361,684, Cl. 526-87.000.
Ministry of International Trade & Industry: *See—*
Honma, Kazuhiro; Shimizu, Kajuro; Nakatani, Tetsu; and Takenaka, Eiichi, 4,361,830, Cl. 340-146.3AC.
Torikai, Eiichi; Kawami, Youji; and Wakabayashi, Noboru, 4,361,602, Cl. 427-123.000.
Minnesota Mining and Manufacturing Company: *See—*
Kinderman, Gerard H.; and Sanders, James F., 4,361,635, Cl. 430-14.000.
Simpson, Jon H., 4,361,676, Cl. 525-118.000.
Stofko, John J., Jr.; Kneipp, Kenneth G.; and Sonnonstine, Terry J., 4,361,637, Cl. 430-58.000.
Minolta Camera Kabushiki Kaisha: *See—*
Yamada, Seiji, 4,361,390, Cl. 354-198.000.
Minoru, Otsuka: *See—*
Tomokazu, Otsuki; Tomikazu, Osaka; and Minoru, Otsuka, 4,360,993, Cl. 52-365.000.
Minovitch, Michael. Automated road transportation system. 4,361,202, Cl. 180-168.000.
Mita Industrial Company Limited: *See—*
Washio, Takaji; and Kai, Masami, 4,361,395, Cl. 355-14.00R.
Mitra, Gautam, to Cutter Laboratories, Inc. Blood coagulation promoting product. 4,361,510, Cl. 260-112.00B.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Endo, Norio; Asayama, Yoshiaki; and Kabuto, Masami, 4,361,119, Cl. 123-52.00M.
Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
Endo, Norio; Asayama, Yoshiaki; and Kabuto, Masami, 4,361,119, Cl. 123-52.00M.

Hori, Kenji; Kiyota, Yuhiko; and Akishino, Katsuo, 4,361,123, Cl. 123-308.000.

Mitsubishi Paper Mills, Ltd.: *See*—
Kanada, Eiji; Kondo, Toshiro; and Yamada, Shoji, 4,361,639, Cl. 430-204.000.

Mitsui Toatsu Chemicals, Inc.: *See*—
Kawamata, Motoo; Ohshima, Kazushi; Onofusa, Mitsuo; Kudoh, Akihide; Kotani, Makoto; and Tsuda, Takeshi, 4,361,709, Cl. 568-804.000.

Miwa, Hiromitsu: *See*—
Hayashi, Tsuneyuki; Ishikawa, Masamichi; and Miwa, Hiromitsu, 4,361,776, Cl. 310-268.000.

Miyoshi, Keisuke; and Sumi, Kenshiro, to Matsushita Electric Industrial Co., Ltd. Translucent projection screen for rear-type image projection system and process for fabricating the same. 4,361,382, Cl. 350-126.000.

Mizobuchi, Yuzo: *See*—
Higashi, Akio; Kawashiri, Kazuhiro; and Mizobuchi, Yuzo, 4,361,638, Cl. 430-58.000.

Mizuno, Koji: *See*—
Takaku, Sakae; Matsuura, Fumiaki; Mori, Takashi; Murakami, Yasushi; Kataoka, Shigeyuki; Takeda, Yasuhisa; Yamashita, Yasuhiro; Takeda, Yumiko; Matsuno, Takashi; Mizuno, Koji; Kaiho, Shinichi; Yamazaki, Tamotsu; Hata, Shun-ichi; and Takanashi, Shigeru, 4,361,572, Cl. 424-266.000.

Mizunuma, Masanori: *See*—
Kurita, Toshiaki; and Mizunuma, Masanori, 4,361,327, Cl. 273-119.00R.

Mizuta, Toshiaki, to Ricoh Co., Ltd. Remote meter reading arrangement. 4,361,838, Cl. 340-870.020.

Mizutani, Masato: *See*—
Hashimoto, Shunichi; Oshio, Hiromichi; Mizutani, Masato; Sanemitsu, Yuzuru; Katoh, Haruhiko; Sumida, Seizo; and Ooishi, Tadashi, 4,361,437, Cl. 71-93.000.

Mlcak, Ludek; and Hoerenz, Peter G., to Carl Zeiss-Stiftung. Digital-marking camera attachment. 4,361,388, Cl. 354-106.000.

Mobil Oil Corporation: *See*—
Dwyer, Francis G.; and Garwood, William E., 4,361,503, Cl. 252-455.00Z.
Gravley, Wilton, 4,361,193, Cl. 175-61.000.
Kaeding, Warren W., 4,361,713, Cl. 585-467.000.
Russo, Robert V., 4,361,506, Cl. 524-577.000.

Moeglich, Karl, to Innova, Inc. Membrane block construction and electrochemical cell. 4,361,475, Cl. 204-252.000.

Moffitt, Merritt L., Jr. Slip resistant mat with molding and method of assembly. 4,361,614, Cl. 428-138.000.

Mokrzycki, Eugene H., to Whirlpool Corporation. Coil retainer and terminal assembly. 4,361,773, Cl. 310-71.000.

Molin, Bengt T.: *See*—
Cassel, Knut E.; and Molin, Bengt T., 4,361,841, Cl. 343-754.000.

Molina, Orlando G., to Rockwell International Corporation. Nonstaining leak tracer solution and method employing same. 4,361,035, Cl. 73-104.000.

Mongrolle, Yves L., to Societe Anonyme de Telecommunications. Fluid feeding device for rotating platforms. 4,361,175, Cl. 141-283.000.

Monitran International, Inc.: *See*—
Allgood, Richard P., 4,361,833, Cl. 340-533.000.

Monks, David E.; and Lockner, Peter P., to Eastman Kodak Company. Camera-responsive charging apparatus for an electronic strobe flash unit. 4,361,389, Cl. 354-139.000.

Monsanto Company: *See*—
Butler, John M.; and Chin, Charles L. D., 4,361,606, Cl. 428-17.000.
Dufour, Daniel L., 4,361,666, Cl. 524-295.000.

Montedison S.p.A.: *See*—
Di Battista, Piero; Nelli, Giuseppe; and Gratani, Francesco, 4,361,695, Cl. 528-289.000.

Montes, Adriel. Piston ring with tongue and groove joint. 4,361,337, Cl. 277-221.000.

Montgomery, James T.: *See*—
Callender, Robert E.; and Montgomery, James T., 4,361,011, Cl. 62-3.000.

Montgomery, John R., to Jobst Institute, Inc. Method of selecting one of a plurality of standard size burn gloves. 4,360,972, Cl. 33-17.00R.

More, Anton, to Wacker-Chemie GmbH; and Messer Griesheim GmbH. Process for the preparation of pre-melted, basic welding powders for submerged arc welding. 4,361,449, Cl. 148-26.000.

Morgan, Adrian J.: *See*—
Johnson, Edward G. T.; and Morgan, Adrian J., 4,361,735, Cl. 179-111.00E.

Mori, Kojiro, to Aisin Seiki Kabushiki Kaisha. Solenoid valve with temperature safety unit. 4,361,275, Cl. 236-88.000.

Mori, Nobuhisa: *See*—
Kamiya, Sigeru; Wakayama, Junji; Hayashi, Nobutoshi; Noguchi, Hiroshi; Uchida, Kenichi; and Mori, Nobuhisa, 4,361,028, Cl. 73-28.000.

Mori, Sanae, to Daido Metal Company Ltd. Bearing material and method of producing same. 4,361,629, Cl. 428-553.000.

Mori, Takashi: *See*—
Takaku, Sakae; Matsuura, Fumiaki; Mori, Takashi; Murakami, Yasushi; Kataoka, Shigeyuki; Takeda, Yasuhisa; Yamashita, Yasuhiro; Takeda, Yumiko; Matsuno, Takashi; Mizuno, Koji; Kaiho, Shinichi; Yamazaki, Tamotsu; Hata, Shun-ichi; and Takanashi, Shigeru, 4,361,572, Cl. 424-266.000.

Morikawa, Teruo: *See*—
Sawada, Takamasa; Torigai, Akiyoshi; and Morikawa, Teruo, 4,361,399, Cl. 355-75.000.

Morishita, Teru; Sugiyama, Matsuyoshi; and Suzuki, Toshikazu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Rotary type electrostatic spray painting device. 4,361,287, Cl. 239-703.000.

Morishita, Teru: *See*—
Fukuda, Daiki; Morishita, Teru; and Suzuki, Toshikazu, 4,361,288, Cl. 239-703.000.

Morita, Shigeru: *See*—
Tatemoto, Masayoshi; and Morita, Shigeru, 4,361,678, Cl. 528-374.000.

Morita, Yutaka: *See*—
Kitamura, Masatsugu; Onoye, Hideo; Ono, Tsuyoshi; Ohno, Fumiaki; Kishima, Yukihiro; and Morita, Yutaka, 4,361,880, Cl. 369-33.000.

Mornar, James A.: *See*—
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Rossmann, Axel, 4,361,416, Cl. 416-218.000.

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Groves, Stanley E., 4,361,876, Cl. 364-900.000.
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Luff, Martin; and Skoda, William G., 4,361,778, Cl. 310-348.000.

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Mountain, Charles F.: *See*—
Flynn, William E.; and Mountain, Charles F., 4,361,253, Cl. 222-162.000.

Mullen, James G.: *See*—
Borgersen, Roland D., deceased; Mullen, James G.; and Lineberger, James W., 4,361,034, Cl. 73-81.000.

Muller, Marcel: *See*—
Alig, Leo; Furst, Andor; Keller, Peter; Muller, Marcel; Kerb, Ulrich; and Wiechert, Rudolf, 4,361,578, Cl. 424-285.000.

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Diepers, Heinrich; and Musebeck, Horst, 4,361,775, Cl. 310-248.000.

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Akita, Yoshio; Itoh, Katsumi; Muto, Katsuya; Iwaki, Katsutaro; and Nakamoto, Takeshi, 4,361,796, Cl. 322-99.000.

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DiNallo, Samuel R., Sr.; and Najarian, Leon K., 4,361,112, Cl. 118-661.000.

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Nakamoto, Takeshi: *See*—
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Nakamura, Michiharu; Hirao, Motohisa; Yamashita, Shigeo; Fukuzawa, Tadashi; and Umeda, Junichi, to Hitachi, Ltd. Semiconductor light emitting element. 4,361,887, Cl. 372-50.000.
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Nakatani, Tetsu: *See*—
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Nalco Chemical Company: *See*—
Dubin, Leonard, 4,361,492, Cl. 252-175.000.
Napco Security Systems, Inc.: *See*—
Stockdale, Roy, 4,361,740, Cl. 200-61.45R.
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Wourms, Robert L., 4,361,599, Cl. 427-90.000.
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Pelka, David C.; and Grey, Baron O. A., 4,361,767, Cl. 307-117.000.
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Naylor, Graham J., to Naylor, Graham John; and Naylor, Pamela Hilda. Method of treatment of manic depressive illness. 4,361,561, Cl. 424-247.000.
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Naylor, Graham J., 4,361,561, Cl. 424-247.000.
Naylor, Pamela Hilda: *See*—
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NCR Corporation: *See*—
Chambers, William I., 4,361,858, Cl. 360-92.000.
Miller, Robert, 4,361,634, Cl. 430-5.000.
Negishi, Kazuo; and Fujita, Mitsuo, to Victor Company of Japan, Ltd. System for controlling rotation of motor. 4,361,787, Cl. 318-6.000.
Nel, Pierre E.; and Pleskowicz, Joanne C., to Polaroid Corporation. Laminar electrical cells and batteries. 4,361,633, Cl. 429-162.000.
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Nelson, Alexander. Container construction. 4,361,246, Cl. 220-67.000.
Nelson, Richard M. Splint for hind leg of an animal. 4,361,143, Cl. 128-87.00R.
Nemes, Sandor; Solymos, Karoly; Barna, Laszlo; Bognar, Tibor; Szigetvari, Jozsef; Vajda, Ferenc; and Tornai, Endre, to Banyaszati Kutato Intezet; and Tatabanyai Szenbanyak. Equipment for the delivery of slurries and for refinement during delivery. 4,361,414, Cl. 415-83.000.
Neubauer, Frank, to Transkrit Corporation. Tentless continuous mailer assembly. 4,361,269, Cl. 229-69.000.
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Carlson, Donald J.; Neumeyer, Martin J.; O'Rourke, Glenn; and Waid, Roger K., 4,361,071, Cl. 89-1.815.
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Newton, Emerson H., to Wing Industries, Inc. Total energy exchange medium and method of making the same. 4,361,620, Cl. 428-341.000.
NGK Insulators, Ltd.: *See*—
Ohmura, Akira; and Nakano, Tadashi, 4,361,654, Cl. 501-21.000.
Nguyen, Tinh: *See*—
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Nichols, Robinson F.: *See*—
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Nicholson, Madison G., Jr.: *See*—
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Nicolai, Rainer: *See*—
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Niimi, Hirohide, to Hitachi, Ltd. Channel search and selection system for television receiver. 4,361,908, Cl. 455-164.000.
Niipondenso Co., Ltd.: *See*—
Sogabe, Ichita, 4,361,309, Cl. 251-137.000.
Nippon Air Brake Co., Ltd.: *See*—
Hata, Yasuhisa, 4,361,425, Cl. 55-218.000.
Nippon Seiko Kabushiki Kaisha: *See*—
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Nippon Soken, Inc.: *See*—
Igashira, Toshihiko; Ishida, Yasuhiko; Nomura, Ken; and Abe, Seiko, 4,361,125, Cl. 123-549.000.
Kamiya, Sigeru; Wakayama, Junji; Hayashi, Nobutoshi; Noguchi, Hiroshi; Uchida, Kenichi; and Mori, Nobuhisa, 4,361,028, Cl. 73-28.000.
Sakakibara, Yasuyuki; Kawai, Hisasi; Sakurai, Kazuhiro; and Hattori, Kyo, 4,361,164, Cl. 137-14.000.
Nippon Steel Corporation: *See*—
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Nippondenso Co., Ltd.: *See*—
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Nisely, Myrl A.: *See*—
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Nishimura, Yoshinori, to Sanyo Electric Co., Ltd. Color television receiver with character display function. 4,361,850, Cl. 358-65.000.
Nishimura, Yutaka: *See*—
Arima, Hideo; Ito, Mituko; Ikegami, Akira; Ueno, Sadayasu; Sato, Kanemasa; and Nishimura, Yutaka, 4,361,597, Cl. 427-53.100.
Nishio, Fujikazu: *See*—
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Nissan Motor Company, Limited: *See*—
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Nitschke, John S.: *See*—
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Nitschke, Norman C.: *See*—
McMaster, Harold A.; Nitschke, Norman C.; and Nitschke, John S., 4,361,432, Cl. 65-104.000.
Nitz, Albert E., to NKN. Combination acoustical muffler and exhaust converter. 4,361,423, Cl. 55-100.000.
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Nitz, Albert E., 4,361,423, Cl. 55-100.000.
Noguchi, Hiroshi: *See*—
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Nomiyama, Neal T.: *See*—
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Nomura, Ken: *See*—
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Nordell, Daniel E., to Sunbird Corporation. Motor voltage controller device. 4,361,793, Cl. 318-729.000.
Norlin Industries, Inc.: *See*—
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North American Formula Promotions Corporation: *See*—
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North American Philips Consumer Electronics Corp.: *See*—
Wolfe, Paul G., 4,361,854, Cl. 358-181.000.
Northern Telecom Limited: *See*—
Williams, Robert J., 4,361,381, Cl. 350-96.230.
Wood, Samuel F., 4,361,732, Cl. 179-18.0AH.
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Noto, Fedele A., to Xerox Corporation. Very high speed duplicator with finishing function. 4,361,393, Cl. 355-3.0SH.
Nova Biomedical Corporation: *See*—
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Novak, Peter: *See*—
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Nozaki, Mineo; Asakura, Osamu; and Nagashima, Masasumi, to Canon Kabushiki Kaisha. Recording head. 4,361,844, Cl. 346-76.0PH.
Nozawa, Kazuo, to Sony Corporation. Magnetic transducer head and method of manufacturing the same. 4,361,860, Cl. 360-120.000.
NTN Toyo Bearing Co., Ltd.: *See*—
Yajima, Seishi; Okamura, Kiyohito; and Shishido, Toetsu, 4,361,679, Cl. 525-389.000.
Yajima, Seishi; Okamura, Kiyohito; and Shishido, Toetsu, 4,361,691, Cl. 528-28.000.
Nu-View Pty. Ltd.: *See*—
Thompson, Robert L.; and Scotcher, Douglas E., 4,360,943, Cl. 15-250.420.
Numbers, Jody L.: *See*—
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Herz, Jack L., 4,361,588, Cl. 426-104.000.

Nylen, Ulf T. G.: *See*—
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O'Brien, Dennis E.: *See*—
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Oce-Nederland B.V.: *See*—
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Ocheltree, William A.: *See*—
Bonniwell, Joel C.; and Ocheltree, William A., 4,361,358, Cl. 301-6.00E.
O'Connell, Philip E., to RCA Corporation. Video disc player having click mechanism. 4,361,884, Cl. 369-77.000.
Oda, Chikao: *See*—
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Odorzynski, Thomas W.: *See*—
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Oelrich, John A.; and Divigard, Albert J., to Chandler Evans Inc. Sub-critical time modulated control mechanism. 4,361,073, Cl. 91-47.000.
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Takahashi, Yoshinobu; Tokushima, Yasuo; Ogata, Kentarou; Suzuki, Mamoru; and Ito, Zyouzi, 4,361,605, Cl. 427-424.000.
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Harasewych, Bohdan A., 4,361,167, Cl. 137-62.000.
Ohata, Tsumoru, to Sony Corporation. Magnetic recording medium. 4,361,627, Cl. 428-425.900.
Ohbayashi-Gumi, Ltd.: *See*—
Teraoku, Hiroshi; and Yamaguchi, Hideki, 4,361,254, Cl. 222-196.000.
Ohgaki, Mitsuomi: *See*—
Watanabe, Ryozo; and Ohgaki, Mitsuomi, 4,361,653, Cl. 435-188.000.
Ohkubo, Hiroyuki: *See*—
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Ohlson, Kurt L. Device for attaching a second component to a first component in a secure but detachable manner. 4,361,314, Cl. 256-65.000.
Ohmura, Akira; and Nakano, Tadashi, to NGK Insulators, Ltd. Porcelain enamel frit for sheet iron ground coat. 4,361,654, Cl. 501-21.000.
Ohno, Fumiaki: *See*—
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Ohta, Yoshitsugu, to Pioneer Electronic Corporation. Data transmission process in a CATV system. 4,361,903, Cl. 455-2.000.
Okada, Takeshi: *See*—
Isobe, Susumu; Nakajima, Hajime; Kondo, Tatsuo; Watanabe, Katsutoshi; Ishida, Yasukazu; Okada, Takeshi; and Kobayashi, Taiki, 4,361,443, Cl. 75-128.00W.
Okamoto, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Video tape recorder. 4,361,856, Cl. 360-64.000.
Okamura, Kiyohito: *See*—
Yajima, Seishi; Okamura, Kiyohito; and Shishido, Toetsu, 4,361,679, Cl. 525-389.000.
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Okuyama, Kiyotaka: *See*—
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Olashaw, William F., to General Electric Company. Copper busbar of H-shaped cross-section. 4,361,724, Cl. 174-129.00B.
Olesin, Andrew S.: *See*—
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Harper, Leroy D.; and Oliver, Arthur B., 4,361,873, Cl. 364-707.000.
Olmsted, John H. Protective container. 4,361,232, Cl. 206-386.000.
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Onopchenko, Anatoli; Sabourin, Edward T.; and Selwitz, Charles M., to Gulf Research & Development Company. Process for preparing m,m'-dinitrobenzophenone. 4,361,704, Cl. 568-306.000.
Onoye, Hideo: *See*—
Kitamura, Masatsugu; Onoye, Hideo; Ono, Tsuyoshi; Ohno, Fumiaki; Kishima, Yukihiro; and Morita, Yutaka, 4,361,880, Cl. 369-33.000.
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Ooishi, Tadashi: *See*—
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Opitz, Heinrich: *See*—
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Holmes, James F., 4,361,110, Cl. 118-665.000.
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Ormond, Alfred N. Differential amplifier system. 4,361,811, Cl. 328-127.000.
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Ortho Pharmaceutical Corporation: *See*—
Kung, Patrick C.; and Goldstein, Gideon, 4,361,549, Cl. 424-85.000.
Kung, Patrick C.; and Goldstein, Gideon, 4,361,550, Cl. 424-85.000.
Ortner Freight Car Company: *See*—
Funk, Stanley T., 4,361,096, Cl. 105-248.000.
Oshio, Hiromichi: *See*—
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Osman, Maged A.; and Revesz, Laszlo, to BBC Brown, Boveri, & Company, Limited. Anisotropic cyclohexyl cyclohexylmethyl ethers. 4,361,494, Cl. 252-299.630.
Ostroski, Richard J.; Aberer, James B.; and Best, Gary, to Rival Manufacturing Company. Device for opening sealed food bags. 4,360,970, Cl. 30-2.000.
Otremba, Klaus, to Siemens Aktiengesellschaft. Balanced converter for microwave range. 4,361,818, Cl. 333-26.000.
Otten, Joachim W., deceased; by Otten, Ursula, heir; by Rudolph nee Otten, Anna G., heir; and by Meininger, Fritz, to Hoechst Aktiengesellschaft. Process for the manufacture of dihalogenotriazinylamino-naphthol compounds. 4,361,698, Cl. 544-211.000.
Otten, Ursula, heir: *See*—
Otten, Joachim W., deceased; Otten, Ursula, heir; Rudolph nee Otten, Anna G., heir; and Meininger, Fritz, 4,361,698, Cl. 544-211.000.
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Seyerle, Carl E., 4,360,999, Cl. 56-11.300.
Overbeek, Robert B., to Dana Corporation. Roller clutch actuator. 4,361,216, Cl. 192-36.000.
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Pullen, William H., 4,361,061, Cl. 82-4.00R.
Paige, Edward. Heating system having supplemental coil arrangement. 4,361,276, Cl. 237-56.000.
Pall Corporation: *See*—
Pall, David B., 4,361,483, Cl. 210-445.000.
Pall, David B., to Pall Corporation. Disposable pharmaceutical filter assembly. 4,361,483, Cl. 210-445.000.
Palloch, Herbert; and Erndt, Hans, to Frankl & Kirchner GmbH & Co. KG, Fabrik fur Elektromotoren u. elektrische Apparate. Securing device for a housing cover element, especially for switch boxes having electrical switching devices. 4,361,350, Cl. 292-251.000.
Palo Alto Medical Research Foundation: *See*—
Remington, Jack S.; and Araujo, Fausto G., 4,361,647, Cl. 435-7.000.
Pantaleo, Peter F.: *See*—
Wong, George H.; Embry, Lamar; Ely, Donald A.; Pantaleo, Peter F.; Cooke, Ronald D.; Chance, James L.; and Beachler, Edward D., 4,361,466, Cl. 162-207.000.
Paoletti, Ugo: *See*—
Benai, Tommaso; Paoletti, Ugo; and Leoncini, Novello, 4,361,532, Cl. 264-188.000.
Paradis, Vallier: *See*—
Sylvestre, Roland; and Paradis, Vallier, 4,361,207, Cl. 184-1.500.
Parish, Harlie A., Jr.: *See*—
Purcell, William P.; Gilliom, Richard D.; and Parish, Harlie A., Jr., 4,361,700, Cl. 544-279.000.
Parmentier, Paul, to U.S. Philips Corporation. Personal card comprising a safety switch. 4,361,756, Cl. 235-487.000.
Pascaud, Ecrire: *See*—
Dufour, Marcel; and Pascaud, Ecrire, 4,361,618, Cl. 428-234.000.

Patel, Bhupendra C., to Kendall Company, The. Catheter. 4,361,152, Cl. 604-99.000.

Patel, Gajendra M., to GTE Automatic Laboratories, Inc. Method for separating hybrid substrate from carrier plate. 4,360,960, Cl. 29-426.500.

Patel, Pravin G.; and Da Costa, Nicholas M. Cross-linked hydrophilic polymers. 4,361,689, Cl. 526-264.000.

Patel, Vithal K.: *See*—
Powell, David R.; and Patel, Vithal K., 4,361,545, Cl. 424-19.000.

Pathfinder Camping Products Limited: *See*—
Chanter, Alan B., 4,361,259, Cl. 224-211.000.

Patience, Donald, to Kendall Company, The. Sponge collection device. 4,361,231, Cl. 206-362.000.

Patrnchak, Carl M.: *See*—
Lewis, Jack L.; Patrnchak, Carl M.; Lew, William D.; and Shybut, George T., 4,361,142, Cl. 128-80.00C.

Paulucci, Jeno F., to Jeno's, Inc. Display package. 4,361,227, Cl. 206-45.320.

Pearrow, Roy H.; and Schoenberg, Jack, to Favorite Check Printers, Inc. Vacuum positioning system for use in composing a plate for offset printing. 4,361,091, Cl. 101-382.0MV.

Pearson, David: *See*—
Shoaf, George; and Pearson, David, 4,361,474, Cl. 204-239.000.

Peck, Susanne M.; Larion, Lois J.; and Rowe, Englebert L., to Upjohn Manufacturing Company, The. Aluminum ibuprofen pharmaceutical suspensions. 4,361,580, Cl. 424-287.000.

Peczkowski, Jurgen: *See*—
Knapp, Heinrich; Lembke, Manfred; Linssen, Mathias; Peczkowski, Jurgen; and Hoppel, Rainer, 4,361,126, Cl. 123-585.000.

Pederson, Pete B.: *See*—
Colin, Richard E.; and Pederson, Pete B., 4,361,404, Cl. 366-2.000.

Peer, Gunter, to Heggenstaller, Anton. Method of and apparatus for shaping a strand during extrusion. 4,361,530, Cl. 264-120.000.

Peer, Hermann: *See*—
Kubin, Johann; Peer, Hermann; and Sodeck, Gottfried, 4,360,989, Cl. 47-65.000.

Pelc, Norbert J.: *See*—
Daniels, Herbert E.; Bernstein, Frank; Lambert, Thomas W.; and Pelc, Norbert J., 4,361,901, Cl. 378-106.000.

Pelka, David C.; and Grey, Baron O. A., to National Technical Systems. Apparatus and method for controlling electrical equipment. 4,361,767, Cl. 307-117.000.

Pellegata, Renato: *See*—
Gandolfi, Carmelo; Pellegata, Renato; Ceserani, Roberto; and Usardi, Maria M., 4,361,577, Cl. 424-285.000.

Pellegrini, Vittorio, to Centro Ricerche Fiat S.p.A. Stationary mixer device arranged to homogeneously mix two or more components in liquid or semiliquid state. 4,361,407, Cl. 366-340.000.

Peloza, Kirk, to Eaton Corporation. Butterfly bypass valve. 4,361,170, Cl. 137-625.290.

Perlos Oy: *See*—
Virtanen, Risto, 4,361,243, Cl. 215-206.000.

Perry, Bruce N.: *See*—
Rabinowitz, Paul; and Perry, Bruce N., 4,361,770, Cl. 307-426.000.

Perry, Ralph A.; and Andrejasich, Raymond J., to Emhart Industries, Inc. Sensing device. 4,361,031, Cl. 73-61.10R.

Pesa, F. A.: *See*—
Blaskie, M. W.; Fox, J. R.; and Pesa, F. A., 4,361,711, Cl. 568-909.000.

Peters, Thomas E.: *See*—
Kim, Han J.; Peters, Thomas E.; and Gustafson, John, 4,361,033, Cl. 73-64.400.

Peterson, David: *See*—
Halle, Reidar; and Peterson, David, 4,361,688, Cl. 526-230.500.

Peterson, Donald W., to Astatic Corporation, The. Base station microphones. 4,361,737, Cl. 179-158.00R.

Peterson, Mark D.: *See*—
Shaner, Kenneth H.; Thoman, Bruce J.; Peterson, Mark D.; Fergus, David A.; and Chiang, Karl K., 4,361,612, Cl. 428-106.000.

Peterson, Richard H.; and Mornar, James A., to Peterson, Richard H. Electronically controlled swell shutter operator for pipe organs. 4,361,069, Cl. 84-346.000.

Petro, Jozsef: *See*—
Mathe, Tibor; Tungler, Antal; and Petro, Jozsef, 4,361,500, Cl. 252-430.000.

Petrolite Corporation: *See*—
Quinlan, Patrick M., 4,361,555, Cl. 424-200.000.

Pettibone Corporation: *See*—
Colin, Richard E.; and Pederson, Pete B., 4,361,404, Cl. 366-2.000.

Pfaudler Co. Inc., The: *See*—
Amorese, Franklyn J.; Piarulli, Vincent J.; and Chapman, James W., 4,361,334, Cl. 277-16.000.

Pfeuffer, Donald F.: *See*—
Mayer, Edward F.; and Pfeuffer, Donald F., 4,361,109, Cl. 118-655.000.

Pfizer Inc.: *See*—
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,361,649, Cl. 435-119.000.
Hageman, David L.; and Crawford, Thomas C., 4,361,513, Cl. 260-245.20R.

Phelps, Weldon L.: *See*—
Miller, Robert G.; and Phelps, Weldon L., 4,361,871, Cl. 364-426.000.

Philberth, Bernhard: *See*—
Philberth, Karl; and Philberth, Bernhard, 4,361,823, Cl. 336-212.000.

Philberth, Karl; and Philberth, Bernhard, to Sawatzky, Wilfried Ernst. Core laminations for shell-type cores, especially for transformers. 4,361,823, Cl. 336-212.000.

Philion, Richard E.: *See*—
Lesher, George Y.; and Philion, Richard E., 4,361,569, Cl. 424-263.000.

Philips, Nicholas A., to Container Corporation of America. Partition structure. 4,361,264, Cl. 229-15.000.

Phillips, Thomas R.: *See*—
Majkrzak, Charles P.; and Phillips, Thomas R., 4,361,372, Cl. 339-64.00M.

Piarulli, Vincent J.: *See*—
Amorese, Franklyn J.; Piarulli, Vincent J.; and Chapman, James W., 4,361,334, Cl. 277-16.000.

Pichler, Ludwig: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; Pichler, Ludwig; Hoefke, Wolfgang; and Gaida, Wolfram, 4,361,575, Cl. 424-273.00R.

Picker International Limited: *See*—
Burl, Michael; and Young, Ian R., 4,361,807, Cl. 324-309.000.

Pietsch, Hartmut: *See*—
Bings, Hubert; Kampf, Fritz; Thome, Roland; Wargalla, Gerhard; Winkhaus, Gunter; Pietsch, Hartmut; Turke, Wolfgang; and Fischer, Peter, 4,361,541, Cl. 423-20.000.

Piggin, Bruce P.: *See*—
Depp, Steven W.; and Piggin, Bruce P., 4,361,781, Cl. 313-409.000.

Pike, Wendell A. Horse exerciser. 4,361,115, Cl. 119-29.000.

Pilkington P.E. Limited: *See*—
Freeman, Michael H., 4,361,378, Cl. 350-36.000.

Pine, Herbert J., to Du Pont de Nemours, E. I., and Company. Aqueous developable photopolymer compositions containing terpolymer binder. 4,361,640, Cl. 430-275.000.

Pioneer Electronic Corporation: *See*—
Ohta, Yoshitsugu, 4,361,903, Cl. 455-2.000.

Piot, Michel: *See*—
Brule, Gerard; Roger, Loic; Fauquant, Jacques; and Piot, Michel, 4,361,587, Cl. 426-42.000.

Piper, Thomas C., to United States of America, Energy. Non-intrusive ultrasonic liquid-in-line detector for small diameter tubes. 4,361,041, Cl. 73-579.000.

Pitney Bowes Inc.: *See*—
Schubert, Keith E.; Albright, David B.; Weimer, Charles M.; and Pollak, Philip, Jr., 4,361,753, Cl. 235-101.000.
Tolmie, Robert J., Jr., 4,361,798, Cl. 323-324.000.

Pitzen, David A. Firearms magazine speed release latch. 4,360,985, Cl. 42-6.000.

Plasma Holdings N.V.: *See*—
Tylko, Jozef K., 4,361,441, Cl. 75-10.00R.

Platter, Sanford; and Shelley, Pierre, to Applied Magnetics Corporation. Method of making a thin film magnetic head assembly with multiconductive connecting elements. 4,360,966, Cl. 29-603.000.

Platter, Sanford, to Computer Peripherals, Inc. Pneumatic radius sensor. 4,361,029, Cl. 73-37.700.

Platz, Rolf: *See*—
Weitz, Hans-Martin; Schnabel, Rolf; and Platz, Rolf, 4,361,710, Cl. 568-864.000.

Pleskowicz, Joanne C.: *See*—
Nel, Pierre E.; and Pleskowicz, Joanne C., 4,361,633, Cl. 429-162.000.

Plunkett, Allan B., to General Electric Company. Apparatus for controlling a PWM inverter-permanent magnet synchronous motor drive. 4,361,791, Cl. 318-723.000.

Pneutek, Inc.: *See*—
Edwards, Robert F., 4,361,306, Cl. 249-106.000.

Poclain: *See*—
Dion, Daniel J.; and Ranini, Daniel G., 4,361,242, Cl. 212-253.000.

Pogozelski, Vincent F.: *See*—
Boba, Joseph; Varadhachary, Seevaram N.; and Pogozelski, Vincent F., 4,361,626, Cl. 428-420.000.

Poignet, Alain; Fournier, Claude; and Le Marouille, Martine, to L'Etat Francais. System for digitally transmitting and displaying data on television receiver screen. 4,361,848, Cl. 358-1.000.

Polaroid Corporation: *See*—
Nel, Pierre E.; and Pleskowicz, Joanne C., 4,361,633, Cl. 429-162.000.

Poley, Kenneth P.: *See*—
Wood, Forrest L.; Jensen, Dale H.; Poley, Kenneth P.; Hoover, Charles C.; and Wilson, Gary L., 4,361,102, Cl. 114-56.000.

Pollak, Philip, Jr.: *See*—
Schubert, Keith E.; Albright, David B.; Weimer, Charles M.; and Pollak, Philip, Jr., 4,361,753, Cl. 235-101.000.

Pollock, Charles R. Chair. 4,361,357, Cl. 297-297.000.

Polygram GmbH: *See*—
Griffiths, Frank A.; and Hankinson, Joseph R., 4,361,898, Cl. 375-114.000.

Polytronic AG: *See*—
Scharer, Ferdinand, 4,361,330, Cl. 273-372.000.

Pommereau, Jean-Pierre; and Hauchecorne, Alain, to A.N.V.A.R. (de l'Agence Nationale de Valorisation de la Recherche). Atmospheric exploration vehicle. 4,361,297, Cl. 244-97.000.

Poncin, Jacques: *See*—
Remy, Maurice A.; Poncin, Jacques; and Rogel, Pierre R., 4,361,853, Cl. 358-167.000.

Ponomarev, Ardalion N.: *See*—
Dukhovskoi, Evgeny A.; Kleiman, Alexandr M.; Ponomarev, Ardalion N.; Silin, Askold A.; Skok, Valentina M.; Talroze,

Viktor L.; and Khomyakov, Anatoly V., 4,361,596, Cl. 427-41.000.

Pop, Ecaterina: *See*—
Pop, Grigore; Ivanus, Gheorghe; Boteanu, Silvia; Tomi, Pavel; and Pop, Ecaterina, 4,361,502, Cl. 252-455.00Z.

Pop, Grigore; Ivanus, Gheorghe; Boteanu, Silvia; Tomi, Pavel; and Pop, Ecaterina, to Institutul de Inginerie Tehnologica Si Proiectari Pentru Industria Chimica - IITPIC. Catalyst for the pyrolysis of hydrocarbons. 4,361,502, Cl. 252-455.00Z.

Post Office, The: *See*—
Johnson, Edward G. T.; and Morgan, Adrian J., 4,361,735, Cl. 179-111.00E.

Powell, David R.; and Patel, Vithal K., to Rowell Laboratories, Inc. Solid pharmaceutical formulations for slow, zero order release via controlled surface erosion. 4,361,545, Cl. 424-19.000.

Power Reactor and Nuclear Fuel Development Corporation: *See*—
Isobe, Susumu; Nakajima, Hajime; Kondo, Tatsuo; Watanabe, Katsutoshi; Ishida, Yasukazu; Okada, Takeshi; and Kobayashi, Taiki, 4,361,443, Cl. 75-128.00W.

PPG Industries, Inc.: *See*—
Ammons, Vernon G., 4,361,692, Cl. 528-51.000.
Criss, Russell C.; and Stofka, Edward J., 4,361,751, Cl. 219-522.000.
Graham, Roy R., 4,361,465, Cl. 162-156.000.
Hillman, Patrick E.; and White, Preston S., 4,361,601, Cl. 427-123.000.
Koontz, Harry S., 4,361,430, Cl. 65-99.500.
Rau, Robert B., 4,361,527, Cl. 264-25.000.

PQ Corporation: *See*—
Spivack, Bruce D., 4,361,624, Cl. 428-398.000.

Pratt, George W., Jr., to Massachusetts Institute of Technology. Method for establishing, in vivo, bone strength. 4,361,154, Cl. 128-660.000.

Pretzer, Wayne R.: *See*—
Habib, Mohammad M.; and Pretzer, Wayne R., 4,361,706, Cl. 568-487.000.
Habib, Mohammad M.; and Pretzer, Wayne R., 4,361,707, Cl. 568-487.000.

Prikkel, John, III; Booher, Dale R.; and Killin, Jeffrey R., to Energy Vent, Inc. Thermal damper for rectangular flue. 4,361,272, Cl. 236-1.00G.

Prince Company, Inc., The: *See*—
Taufiq, Farook, 4,361,591, Cl. 426-557.000.

Pryor, Michael J.; Heine, Murray A.; and Brock, Andrew J., to Olin Corporation. Copper alloy cleaning process. 4,361,445, Cl. 134-3.000.

Pullen, Joel F. Portable compact microscope. 4,361,377, Cl. 350-8.000.

Pullen, William H., to P. & O. Australia Limited. Machine tool for dressing the end face of an engine cylinder liner. 4,361,061, Cl. 82-4.00R.

Pultorak, Donald C.: *See*—
Hernqvist, Karl G.; and Pultorak, Donald C., 4,361,370, Cl. 316-2.000.

Purcell, William P.; Gilliom, Richard D.; and Parish, Harlie A., Jr., to Waldron, James S. Pyridopyrimidinone derivatives. 4,361,700, Cl. 544-279.000.

Putnam, Howard G., to Gaston County Dyeing Machine Company. Method and apparatus for wet processing textile material. 4,360,937, Cl. 8-152.000.

Pye, Richard T.: *See*—
Hvizd, Andrew, Jr.; and Pye, Richard T., 4,361,723, Cl. 174-102.0SC.

Pyles, Gerald D.: *See*—
Taylor, Byron K.; and Pyles, Gerald D., 4,361,883, Cl. 369-55.000.

Quaker Oats Company, The: *See*—
Bogner, Ben R.; Bozer, Keith B.; Dunlop, William R.; and Leitheiser, Robert H., 4,361,613, Cl. 428-119.000.

Quick, Marshall K.: *See*—
Lobenstein, Helmut; and Quick, Marshall K., 4,361,891, Cl. 375-1.000.

Quinlan, Patrick M., to Petrolite Corporation. α-1,4-Thiazine alkanephosphonic acids. 4,361,555, Cl. 424-200.000.

Ra-Shipping Ltd. Oy: *See*—
Sippola, Pertti J., 4,361,448, Cl. 148-15.000.

Raatz, Gabor J. Industrial peeler for onions or the like bulbous and tuberous vegetation. 4,361,084, Cl. 99-516.000.

Rabinowitz, Paul; and Perry, Bruce N., to Exxon Research and Engineering Co. Technique for synchronization of raman scattered radiation. 4,361,770, Cl. 307-426.000.

Radiation Dynamics, Inc.: *See*—
Farrell, Joseph P.; and Thompson, Chester C., Jr., 4,361,812, Cl. 328-233.000.

Radiochemical Centre Limited, The: *See*—
Bryant, Jack; Howes, John H.; and Smout, Dennis W. S., 4,361,763, Cl. 250-381.000.

Rahuel, Jean-Claude: *See*—
Dagnelie, Jean-Paul; Veilex, Robert; and Rahuel, Jean-Claude, 4,361,725, Cl. 178-19.000.

Rajeevakumar, Thekkemadathil V., to International Business Machines Corporation. Superconducting soliton devices. 4,361,768, Cl. 307-245.000.

Raleigh, William F.; and Keegan, Patrick J., to Teledyne Industries, Inc. Electronic temperature control. 4,361,274, Cl. 236-21.00B.

Ramming, John E.: *See*—
Hull, Maury L.; and Ramming, John E., 4,361,344, Cl. 280-613.000.

Ranini, Daniel G.: *See*—
Dion, Daniel J.; and Ranini, Daniel G., 4,361,242, Cl. 212-253.000.

Rapmund, Rudolf W.: *See*—
Loggins, Ted C., Jr.; Selberg, John P.; and Rapmund, Rudolf W., 4,361,406, Cl. 366-25.000.

Rapp, Karl; and Choschzick, Joachim, to Siemens Aktiengesellschaft. Reinforced gasket for segmented housing. 4,361,348, Cl. 285-31.000.

Rasmusson, Gary H.; and Tolman, Richard L., to Merck & Co., Inc. Novel process for the preparation of N^6-alkyl-arprinocid. 4,361,699, Cl. 544-277.000.

Ratcliffe, Ronald W., to Merck & Co., Inc. 2-Substituted thio-6-substituted-carbapen-2-em-3-carboxylic acids. 4,361,512, Cl. 260-245.20T.

Ratfisch Instrumente: *See*—
Schlosser, Wolfgang, 4,361,810, Cl. 324-468.000.

Rau, Robert B., to PPG Industries, Inc. Method of forming stretched acrylic sheets. 4,361,527, Cl. 264-25.000.

Raychem Corporation: *See*—
Jansons, Viktors, 4,361,693, Cl. 528-86.000.
Lutz, Michael A., 4,361,799, Cl. 324-52.000.

Raycon Corporation: *See*—
Rupert, Gary F.; Kennedy, Thomas M.; and MacGregor, John R., 4,361,745, Cl. 219-69.00G.

RCA Corporation: *See*—
Bolger, Thomas V., 4,361,849, Cl. 358-312.000.
Clemens, Jon K., 4,361,881, Cl. 369-126.000.
Douglas, Edward C., 4,361,762, Cl. 250-251.000.
Hernqvist, Karl G.; and Pultorak, Donald C., 4,361,370, Cl. 316-2.000.
Jastrzebski, Lubomir L., 4,360,963, Cl. 29-571.000.
Kaganowicz, Grzegorz; and Robinson, John W., 4,361,595, Cl. 427-39.000.
O'Connell, Philip E., 4,361,884, Cl. 369-77.000.
Rodgers, Robert L., III, 4,361,784, Cl. 315-382.000.
Schade, Otto H., Jr., 4,361,815, Cl. 330-254.000.
Schade, Otto H., Jr., 4,361,816, Cl. 330-288.000.
Taylor, Byron K.; and Pyles, Gerald D., 4,361,883, Cl. 369-55.000.
Theriault, Gerald E., 4,361,909, Cl. 455-286.000.
Wine, Charles M., 4,361,907, Cl. 455-160.000.
Witchey, Albert L., 4,361,365, Cl. 308-2.00R.

Reeh, Kurt; Jerofke, Hans-Christoph; and Kramer, Friedrich, to Buderus Aktiengesellschaft. Epoxy-concrete coated pipe. 4,361,336, Cl. 277-207.00A.

Regan, Michael T.: *See*—
Isaacson, Henry V.; and Regan, Michael T., 4,361,636, Cl. 430-32.000.

Rehrig, David L.: *See*—
Gilly, Randall K.; and Rehrig, David L., 4,360,964, Cl. 29-574.000.

Reiff, Harro, to Karl Mengele & Sohne Maschinenfabruk und Eisengiesserei GmbH & Co. Plate feeding apparatus for a shearing device. 4,361,062, Cl. 83-71.000.

Reiff, Karl: *See*—
Clemens, Alexander; Schueler, Peter; Reiff, Karl; and Warga, Johann, 4,361,121, Cl. 123-198.0DB.

Reifschneider, Walter, to Dow Chemical Company, The. Method for controlling insects with substituted phenyl phosphorothioates. 4,361,556, Cl. 424-216.000.

Reiling, Gilbert H., to General Electric Company. Jacketed discharge lamp having oxidizable fail-safe switch. 4,361,782, Cl. 315-73.000.

Reimann, Karl J.: *See*—
Kupperman, David S.; and Reimann, Karl J., 4,361,044, Cl. 73-623.000.

Reinke, Thomas R., to Honeywell Inc. Voltage summation circuit: 4,361,771, Cl. 307-497.000.

Rellick, Joseph R.: *See*—
Marcus, Sanford M.; and Rellick, Joseph R., 4,361,718, Cl. 136-256.000.

Remington, Jack S.; and Araujo, Fausto G., to Palo Alto Medical Research Foundation. Sandwich immunoassay and compositions for use therein. 4,361,647, Cl. 435-7.000.

Remy, Maurice A.; Poncin, Jacques; and Rogel, Pierre R., to Telediffusion de France; Poncin, Jacques; and Rogel, Pierre R. System for reducing the visibility of the noise in television pictures. 4,361,853, Cl. 358-167.000.

Renaud, Alain P., to Coopetanche S.A. Process for everting a lining into a conduit utilizing two injection fluids. 4,361,451, Cl. 156-64.000.

Renishaw Electrical Ltd.: *See*—
McMurtry, David R., 4,360,973, Cl. 33-174.00L.

Renner, Stefan: *See*—
Frister, Manfred; Renner, Stefan; Meyer, Friedhelm; and Lack, Peter, 4,361,867, Cl. 363-145.000.

Reschke, Reinhold, to Hermann Berstorff Maschinenbau GmbH. Process and apparatus for the continuous manufacture of a conveyor belt. 4,361,456, Cl. 156-179.000.

Resneau, Jean-Claude; Doyen, Jean; and Ribier, Robert, to Thomson-CSF. Low thermal resistance insulating support and base or box for power component incorporating such a support. 4,361,720, Cl. 174-16.0HS.

Revesz, Laszlo: *See*—
Osman, Maged A.; and Revesz, Laszlo, 4,361,494, Cl. 252-299.630.

Rhone-Poulenc Industries: *See*—
Locatelli, Jena-Louis, 4,361,690, Cl. 528-21.000.

Ribier, Robert: *See*—
Resneau, Jean-Claude; Doyen, Jean; and Ribier, Robert, 4,361,720, Cl. 174-16.0HS.

Ricoh Co., Ltd.: *See—*
Ikeda, Sunao; Kaneko, Tamaki; Hibi, Kunio; Okuzawa, Tugio; Kakitani, Yohtaro; and Kikuchi, Hideo, 4,361,319, Cl. 271-209.000.
Kikuchi, Hideo; and Kaneko, Tamaki, 4,361,320, Cl. 271-288.000.
Mayer, Edward F.; and Pfeuffer, Donald F., 4,361,109, Cl. 118-655.000.
Mizuta, Toshiaki, 4,361,838, Cl. 340-870.020.

Riedhammer, Thomas M.: *See—*
Smith, Francis X.; and Riedhammer, Thomas M., 4,361,548, Cl. 424-78.000.

Riker Laboratories, Inc.: *See—*
Galbraith, William, 4,361,551, Cl. 424-94.000.

Rinderle, Heinz: *See—*
Malinowski, Christopher W.; and Rinderle, Heinz, 4,361,837, Cl. 340-825.720.

Rion Kabushiki Kaisha: *See—*
Marutake, Yozo; Fukutome, Tatsuro; Inaba, Yasuo; and Fukuyama, Kunihiko, 4,361,733, Cl. 179-82.000.

Risdon Corporation: *See—*
Tscheppe, Andrew, 4,361,418, Cl. 417-54.000.

Rival Manufacturing Company: *See—*
Ostroski, Richard J.; Aberer, James B.; and Best, Gary, 4,360,970, Cl. 30-2.000.

Robert Bosch GmbH: *See—*
Clemens, Alexander; Schueler, Peter; Reiff, Karl; and Warga, Johann, 4,361,121, Cl. 123-198.0DB.
Frister, Manfred; Renner, Stefan; Meyer, Friedhelm; and Lack, Peter, 4,361,867, Cl. 363-145.000.
Hofmann, Karl; and Seifert, Kurt, 4,361,286, Cl. 239-453.000.
Knapp, Heinrich; Lembke, Manfred; Linssen, Mathias; Peczkowski, Jurgen; and Hoppel, Rainer, 4,361,126, Cl. 123-585.000.
Latsch, Reinhard, 4,361,122, Cl. 123-266.000.

Roberts, James K., to Bendix Corporation, The. Drum brake having a vibration damping member. 4,361,214, Cl. 188-335.000.

Robillard, Jean J.; and Angleman, John D. Image-transferring sheet. 4,361,108, Cl. 118-265.000.

Robillard, Jean J. Color photography element with induced spectrosensitization. 4,361,645, Cl. 430-505.000.

Robinson, John W.: *See—*
Kaganowicz, Grzegorz; and Robinson, John W., 4,361,595, Cl. 427-39.000.
Wilcox, Brian N.; and Robinson, John W., 4,361,065, Cl. 84-1.030.

Roccaforte, Harry I., to Champion International Corporation. Double cell, double slide dispensing carton and carton blank for forming same. 4,361,270, Cl. 229-17.0SC.

Rockwell International Corporation: *See—*
Israeli, Leonardo, 4,361,262, Cl. 228-118.000.
Molina, Orlando G., 4,361,035, Cl. 73-104.000.
Soclof, Sidney I.; and Elliott, Michael T., 4,361,814, Cl. 330-4.900.

Rodgers, Aubrey, to United States of America, Army. Two-degree-of-freedom gyro with radiant energy pickoffs. 4,361,760, Cl. 250-231.0GY.

Rodgers, Robert L., III, to RCA Corporation. System for coupling the focus current to the focus voltage of a camera tube. 4,361,784, Cl. 315-382.000.

Rogel, Pierre R.: *See—*
Remy, Maurice A.; Poncin, Jacques; and Rogel, Pierre R., 4,361,853, Cl. 358-167.000.

Roger, Loic: *See—*
Brule, Gerard; Roger, Loic; Fauquant, Jacques; and Piot, Michel, 4,361,587, Cl. 426-42.000.

Roh, David J.: *See—*
Barber, Tommie L.; Korodi, Miklos B.; Davis, Steven J.; Schuldt, David A.; Christenson, Paul E.; Towse, Andrew C.; Jones, Donald S.; and Roh, David J., 4,361,730, Cl. 179-5.00R.

Rohde, Robert S.: *See—*
Buser, Rudolph G.; Rohde, Robert S.; and Nomiyama, Neal T., 4,361,911, Cl. 455-605.000.

Rohm GmbH: *See—*
Arndt, Peter J.; Ross, Klaus; and Wenzel, Franz, 4,361,687, Cl. 524-850.000.

Rolls Royce Limited: *See—*
McMurtry, David R., 4,360,973, Cl. 33-174.00L.

Rominger, Karl L.: *See—*
Stricker, Herbert; Freund, Bernhard; Harwalik, Heribert; Rominger, Karl L.; Darda, Siegfried; Haselbarth, Volkmar; Arndts, Dietrich; Bechtel, Wolf D.; Bozler, Gerhard; Brickl, Rolf; and Gruber, Peter, 4,361,546, Cl. 424-19.000.

Rosenberg, Peretz. Fluid distribution system and pressure equalizer-valves useful therein. 4,361,280, Cl. 239-76.000.

Ross, Klaus: *See—*
Arndt, Peter J.; Ross, Klaus; and Wenzel, Franz, 4,361,687, Cl. 524-850.000.

Rossmann, Axel, to Motoren- und Turbinen-Union Munchen GmbH. Rotor for axial-flow turbomachines. 4,361,416, Cl. 416-218.000.

Roth, David W., to 2500 Corporation, The. Non-skid carpet protector. 4,361,610, Cl. 428-95.000.

Roth, Mario: *See—*
Bartusel, Karl R.; Roth, Mario; Schamberg, Walter; and Willems, Josef, 4,361,428, Cl. 65-29.000.

Rotolo, Guglielmo E., to Dow Corning Corporation. Sun position sensor for two axis tracking. 4,361,758, Cl. 250-203.00R.

Rowe, Englebert L.: *See—*
Peck, Susanne M.; Larion, Lois J.; and Rowe, Englebert L., 4,361,580, Cl. 424-287.000.

Rowell Laboratories, Inc.: *See—*
Powell, David R.; and Patel, Vithal K., 4,361,545, Cl. 424-19.000.

Rudolph nee Otten, Anna G., heir: *See—*
Otten, Joachim W., deceased; Otten, Ursula, heir; Rudolph nee Otten, Anna G., heir; and Meininger, Fritz, 4,361,698, Cl. 544-211.000.

Ruhrkohle AG: *See—*
Christensen, Hans; Schlager, Paul; and Korfmann, Werner, 4,361,079, Cl. 98-50.000.

Rupert, Gary F.; Kennedy, Thomas M.; and MacGregor, John R., to Raycon Corporation. Process control for electrical discharge machining apparatus. 4,361,745, Cl. 219-69.00G.

Rusch, Richard B. Structural members and assemblages. 4,361,098, Cl. 108-152.000.

Rush, Donald L., to Westinghouse Electric Corp. Vehicle train routing apparatus and method. 4,361,300, Cl. 246-5.000.

Rush, Donald L., to Westinghouse Electric Corp. Vehicle train tracking apparatus and method. 4,361,301, Cl. 246-34.00R.

Russell, Larry R. Well apparatus actuating means having pressure accumulator means and method of use. 4,361,188, Cl. 166-381.000.

Russell, Lawrence O., to North American Formula Promotions Corporation. Dismountable barrier. 4,361,313, Cl. 256-13.100.

Russo, Robert V., to Mobil Oil Corporation. Compositions comprising a poly(methyl ethenyl benzene) resin and mineral oil. 4,361,506, Cl. 524-577.000.

Ruttenberg, Reid W. Portable ironing pad. 4,360,984, Cl. 38-140.000.

Rutter, Christopher C. Method and apparatus for filling and sealing plastic bag fluid containers. 4,360,996, Cl. 53-469.000.

S & G Tool Aid Corp.: *See—*
Fodali, Adolph; and Gering, George, 4,361,800, Cl. 324-53.000.

Sabourin, Edward T.; and Selwitz, Charles M., to Gulf Oil Corporation. M-Alkynylanilides and use as herbicides. 4,361,440, Cl. 71-118.000.

Sabourin, Edward T.: *See—*
Onopchenko, Anatoli; Sabourin, Edward T.; and Selwitz, Charles M., 4,361,704, Cl. 568-306.000.

Sade, Moshe E.: *See—*
Elles, Richard J.; Kulicke, Frederick W., Jr.; Sade, Moshe E.; and Soffa, Albert, 4,361,261, Cl. 228-103.000.

Saeki, Tadashi: *See—*
Minematsu, Hiroyuki; Matsumoto, Kojiro; Saeki, Tadashi; and Kishi, Akira, 4,361,684, Cl. 526-87.000.

Safe Automatic Flow Engineering, Inc.: *See—*
McCornack, Robert R., 4,361,168, Cl. 137-315.000.

Sagawa, Morikazu; Makimoto, Mitsuo; and Yamashita, Sadahiko, to Matsushita Electric Industrial Company, Limited. Hybrid microwave circuit. 4,361,820, Cl. 333-206.000.

Saget, Pierre. Process for centrifugal separation and apparatus for carrying it out, applicable to a mixture of phases of any states. 4,361,490, Cl. 210-787.000.

Saint-Gobain Vitrage: *See—*
Bartusel, Karl R.; Roth, Mario; Schamberg, Walter; and Willems, Josef, 4,361,428, Cl. 65-29.000.

Saito, Shuichi: *See—*
Kimura, Ryusuke; Saito, Shuichi; and Ishii, Kenshun, 4,360,933, Cl. 4-301.000.

Saito, Tadao; Kishi, Takao; and Kakuta, Yoshiyuki, to Yoshino Kogyosho Co., Ltd. Accumulator type manual atomizer. 4,361,255, Cl. 222-321.000.

Sakai, Yoshio: *See—*
Shima, Seiya; Kuroha, Hiroaki; Ando, Takeki; Kurosawa, Toshiaki; Inaba, Hiromi; and Sakai, Yoshio, 4,361,866, Cl. 363-129.000.

Sakai, Yukio; Yamazaki, Fumio; and Satoh, Isao, to Matsushita Electric Industrial Co., Ltd. Method and apparatus for scanning light beam. 4,361,394, Cl. 355-3.00R.

Sakakibara, Yasuyuki; Kawai, Hisasi; Sakurai, Kazuhiro; and Hattori, Kyo, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Method of driving solenoid-operated proportional control valve. 4,361,164, Cl. 137-14.000.

Sakamoto, Hitoshi, to Sony Corporation. Automatic head tracking system. 4,361,857, Cl. 360-77.000.

Sakamoto, Yoichi, to Matsushita Electric Industrial Co., Ltd. Channel selector having a plurality of tuning systems. 4,361,906, Cl. 455-140.000.

Sakurai, Kazuhiro: *See—*
Sakakibara, Yasuyuki; Kawai, Hisasi; Sakurai, Kazuhiro; and Hattori, Kyo, 4,361,164, Cl. 137-14.000.

Sall, Hans O., to Swedish University of Agricultural Sciences, The. Apparatus for feeding longitudinal heterogenous goods. 4,361,222, Cl. 198-519.000.

Salway-Waller, Malcolm: *See—*
Murphy, Brian J. M.; Withers, Leslie A.; and Salway-Waller, Malcolm, 4,360,938, Cl. 12-12.500.

Saminathan, Manjini: *See—*
D'Amico, John F.; DeAngelo, Michael A., Jr.; and Saminathan, Manjini, 4,360,968, Cl. 29-840.000.

Sampson, Jacob. Meat tenderizer. 4,360,952, Cl. 17-45.000.

Sanders, James F.: *See—*
Kinderman, Gerard H.; and Sanders, James F., 4,361,635, Cl. 430-14.000.

Sandoz, Inc.: *See—*
Meyers, Marion D.; and Stoner, Graham A., 4,361,435, Cl. 71-66.000.

Sandoz Ltd.: *See—*
Berthold, Richard, 4,361,562, Cl. 424-250.000.

Sanemitsu, Yuzuru: *See—*
Hashimoto, Shunichi; Oshio, Hiromichi; Mizutani, Masato; Sanemitsu, Yuzuru; Katoh, Haruhiko; Sumida, Seizo; and Ooishi, Tadashi, 4,361,437, Cl. 71-93.000.
Sangamo Weston, Inc.: *See—*
Dyer, Robert E.; and Carney, Murray C., 4,361,877, Cl. 364-900.000.
Sankyo Company, Limited: *See—*
Terahara, Akira; Hamano, Kiyoshi; Tsujita, Yoshio; and Tanaka, Minoru, 4,361,515, Cl. 549-292.000.
Santa Fe International Corporation: *See—*
Lloyd, Samuel H., III; and Goren, Yoram, 4,361,104, Cl. 114-258.000.
Santilli, Raymond R. Battery charger polarity circuit control. 4,361,795, Cl. 320-26.000.
Sanyo Electric Co., Ltd.: *See—*
Nishimura, Yoshinori, 4,361,850, Cl. 358-65.000.
Shono, Masahiro, 4,361,865, Cl. 363-19.000.
Sarma, Monoj K.: *See—*
Brooks, Arthur W.; Garibian, Vahan M.; and Sarma, Monoj K., 4,361,593, Cl. 426-627.000.
Wauters, Ronald P.; Kenyon, Ralph E.; Sarma, Monoj K.; Layton, Larry L.; Swanson, Wade H.; and Hibler, Diane E., 4,361,589, Cl. 426-270.000.
Sasaki, Yoshikazu. Pipe shearing device. 4,361,064, Cl. 83-319.000.
Sato, Akihiko: *See—*
Honaga, Susumu; and Sato, Akihiko, 4,361,166, Cl. 137-117.000.
Sato, Kanemasa: *See—*
Arima, Hideo; Ito, Mituko; Ikegami, Akira; Ueno, Sadayasu; Sato, Kanemasa; and Nishimura, Yutaka, 4,361,597, Cl. 427-53.100.
Sato, Yo, to Kabushiki Kaisha Sato. Printing position adjusting mechanism for printers. 4,361,087, Cl. 101-109.000.
Satoh, Isao: *See—*
Sakai, Yukio; Yamazaki, Fumio; and Satoh, Isao, 4,361,394, Cl. 355-3.00R.
Saunders, Tom R., to Texas Botanical Research, Company. Organic insecticide. 4,361,554, Cl. 424-180.000.
Saur, Charles W., to Lear Siegler, Inc. Actuator belt accumulator. 4,361,225, Cl. 198-781.000.
Sawada, Takamasa; Torigai, Akiyoshi; and Morikawa, Teruo, to Canon Kabushiki Kaisha. Apparatus for releasing a sheet-registration mechanism. 4,361,399, Cl. 355-75.000.
Sawai, Masatake. Gusseted suit case. 4,361,215, Cl. 190-18.00A.
Sawatzky, Wilfried Ernst: *See—*
Philberth, Karl; and Philberth, Bernhard, 4,361,823, Cl. 336-212.000.
Sawicki, John E.: *See—*
Herman, Frederick L.; and Sawicki, John E., 4,361,712, Cl. 568-932.000.
Saxby, Michael E., to Hilvenna Limited. Ammunition for small arms. 4,361,093, Cl. 102-447.000.
Schade, Otto H., Jr., to RCA Corporation. Operational amplifier with programmable gain. 4,361,815, Cl. 330-254.000.
Schade, Otto H., Jr., to RCA Corporation. Current mirror amplifiers with programmable gain. 4,361,816, Cl. 330-288.000.
Schaefer, Henry A.: *See—*
Dubovsky, George S.; Schaefer, Henry A.; and Sherman, Ralph R., 4,361,821, Cl. 333-219.000.
Schaeufele, Herman J.: *See—*
McVay, Robert D.; and Schaeufele, Herman J., 4,361,021, Cl. 72-71.000.
Schafer, Franz: *See—*
Mertens, Alfred; and Schafer, Franz, 4,361,468, Cl. 202-239.000.
Schafer, Paul; Mayer, Fritz; and Kundig, Jurg, to Ciba-Geigy Corporation. Process for providing synthetic textile fabrics with an antistatic finish. 4,361,611, Cl. 428-96.000.
Schaller, Helmut F. K. Bridge device for stringed instrument. 4,361,068, Cl. 84-299.000.
Schamberg, Walter: *See—*
Bartusel, Karl R.; Roth, Mario; Schamberg, Walter; and Willems, Josef, 4,361,428, Cl. 65-29.000.
Scharer, Ferdinand, to Polytronic AG. Target with interchangeable target images. 4,361,330, Cl. 273-372.000.
Schatteman, Etienne A. M., to Staar S.A. Loading system for video cassettes. 4,361,859, Cl. 360-96.500.
Scheerer, Joachim: *See—*
Grutzediek, Hartmut; and Scheerer, Joachim, 4,361,831, Cl. 340-347.0NT.
Schering Corporation: *See—*
Bristol, James A.; and Lovey, Raymond G., 4,361,567, Cl. 424-256.000.
Nagabhushan, Tattanhalli L., 4,361,557, Cl. 424-226.000.
Schildkraut, Alan L.: *See—*
Marmillion, David J.; Schildkraut, Alan L.; and Gallusser, David O., 4,361,374, Cl. 339-90.00R.
Schiller, Wilfried, to Blaupunkt Werke GmbH. Apparatus for synchronizing deflection signal generators to the corresponding synchronization signals in a television system. 4,361,786, Cl. 315-403.000.
Schilz, Wolfram: *See—*
Meyer, Wolfgang; and Schilz, Wolfram, 4,361,801, Cl. 324-58.50R.
Schinner, Edward N.: *See—*
Carter, Thomas P.; Cates, Robert E.; Harrison, Richard H., Jr.; and Schinner, Edward N., 4,361,426, Cl. 55-257.0PV.
Schippers, Petrus L.: *See—*
Kilsdonk, Harley; Linde, Frits; and Schippers, Petrus L., 4,361,489, Cl. 210-780.000.
Schlager, Paul: *See—*
Christensen, Hans; Schlager, Paul; and Korfmann, Werner, 4,361,079, Cl. 98-50.000.
Schleicher, Robert G.: *See—*
Smith, Stanley B., Jr.; Schleicher, Robert G.; and Eldred, Edward C., 4,361,401, Cl. 356-36.000.
Schlosser, Wolfgang, to Ratfisch Instrumente. Arrangement for monitoring the concentration of potentially explosive substances in gas streams. 4,361,810, Cl. 324-468.000.
Schluderberg, Donald C., to Babcock & Wilcox Company, The. Moving bed heat storage and recovery system. 4,361,009, Cl. 60-659.000.
Schmelz, Helmut: *See—*
Hanke, Leopold; and Schmelz, Helmut, 4,361,529, Cl. 264-65.000.
Schmitt, Rudi. Measuring apparatus for the quantitative determination of a component of a gas mixture. 4,361,027, Cl. 73-23.000.
Schnabel, Rolf: *See—*
Weitz, Hans-Martin; Schnabel, Rolf; and Platz, Rolf, 4,361,710, Cl. 568-864.000.
Schneider, Wilhelm, to Heye, Hermann. Cooling arrangement for glass ware forming tools. 4,361,434, Cl. 65-265.000.
Schnell, William J., to Baxter Travenol Laboratories, Inc. Capillary fiber bundles. 4,361,481, Cl. 210-85.000.
Schoenberg, Jack: *See—*
Pearrow, Roy H.; and Schoenberg, Jack, 4,361,091, Cl. 101-382.0MV.
Schoenfield, Palmer J.; and Disko, Harry, to Marvin Glass & Associates. Toy assembly line for toy motor vehicle. 4,360,988, Cl. 46-39.000.
Schopper, Bernd; and Tandler, Peter, to ITT Industries, Inc. Dual-circuit pressure control valve for hydraulic brake systems. 4,361,361, Cl. 303-6.00C.
Schreyer, Kenneth D.; and Cooper, Alton H., to Columbus McKinnon Corporation. Precise load positioner. 4,361,312, Cl. 254-276.000.
Schroeder, Manfred: *See—*
Zaar, Wolfgang; Schroeder, Manfred; and Maahs, Gunther, 4,361,686, Cl. 526-143.000.
Schubert, Keith E.; Albright, David B.; Weimer, Charles M.; and Pollak, Philip, Jr., to Pitney Bowes Inc. Process for interconnecting an actuator and a postage meter. 4,361,753, Cl. 235-101.000.
Schueler, Peter: *See—*
Clemens, Alexander; Schueler, Peter; Reiff, Karl; and Warga, Johann, 4,361,121, Cl. 123-198.0DB.
Schuldt, David A.: *See—*
Barber, Tommie L.; Korodi, Miklos B.; Davis, Steven J.; Schuldt, David A.; Christenson, Paul E.; Towse, Andrew C.; Jones, Donald S.; and Roh, David J., 4,361,730, Cl. 179-5.00R.
Schuler, Alan L., to General Dynamics Corporation. Liquid level sensor. 4,361,038, Cl. 73-295.000.
Schulte Corporation: *See—*
Kokenge, Elmer J.; Carlson, C. William; Backscheider, F. A.; and Campbell, William M., 4,361,099, Cl. 108-152.000.
Schulz, Johann G.; and Margosian, Daniel, to Gulf Research & Development Company. Novel composition and process for producing solid resin therefrom. 4,361,671, Cl. 524-879.000.
Schutz, Rudolph W., to Crown Zellerbach Corporation. Embossing apparatus. 4,361,085, Cl. 101-23.000.
Schwab, Wolfgang: *See—*
Gengler, Hans; Schwab, Wolfgang; Wall, Fraser; and Bailey, Thomas, 4,361,478, Cl. 208-130.000.
Schwarzkopf, Anton, to Anton Schwarzkopf Stahl- und Fahrzeugbau, Firma. Drive member for rail-type amusement-ride car. 4,361,094, Cl. 104-168.000.
Schwehr, Richard A.: *See—*
Leskoverc, Edward V.; and Schwehr, Richard A., 4,361,741, Cl. 200-85.00A.
Schweiger, Fritz: *See—*
Friedrich, Klaus; Nicolai, Rainer; Schweiger, Fritz; and Wachholz, Winfried, 4,361,535, Cl. 376-215.000.
Scotcher, Douglas E.: *See—*
Thompson, Robert L.; and Scotcher, Douglas E., 4,360,943, Cl. 15-250.420.
Scripps Clinic and Research Foundation: *See—*
Zimmerman, Theodore S.; and Fulcher, Carol A., 4,361,509, Cl. 260-112.00B.
Sealed Power Corporation: *See—*
Kueny, Kenneth E., 4,361,120, Cl. 123-90.550,
Segalman, Irwin: *See—*
Tanrikut, Ibrahim S.; Wagner, Walter B.; Segalman, Irwin; and Goldberg, Perry, 4,361,010, Cl. 60-757.000.
Segers, Jacobus C.: *See—*
Duff, Alan J.; and Segers, Jacobus C., 4,361,517, Cl. 260-412.500.
Segersten, Ragnar. Pulling apparatus with built-in weight magazine. 4,361,323, Cl. 272-118.000.
Seifert, Kurt: *See—*
Hofmann, Karl; and Seifert, Kurt, 4,361,286, Cl. 239-453.000.
Selas Corporation of America: *See—*
Gengler, Hans; Schwab, Wolfgang; Wall, Fraser; and Bailey, Thomas, 4,361,478, Cl. 208-130.000.
Selberg, John P.: *See—*
Loggins, Ted C., Jr.; Selberg, John P.; and Rapmund, Rudolf W., 4,361,406, Cl. 366-25.000.
Selwitz, Charles M.: *See—*
Onopchenko, Anatoli; Sabourin, Edward T.; and Selwitz, Charles M., 4,361,704, Cl. 568-306.000.
Sabourin, Edward T.; and Selwitz, Charles M., 4,361,440, Cl. 71-118.000.

Service Distributors, Inc.: *See*—
Sidline, George B.; Henshaw, John F.; and Elkus, Eugene S., 4,361,755, Cl. 235-476.000.
Sexton, Dennis F.; and Hadaskay, Richard J., to International Paper Company. Sleeve construction for a bag having a filling opening. 4,361,268, Cl. 229-62.500.
Seyerle, Carl E., to Outboard Marine Corporation. Lawn mower including planetary clutch/brake. 4,360,999, Cl. 56-11.300.
Seymour, David J.: *See*—
Kirby, William E.; and Seymour, David J., 4,361,105, Cl. 114-260.000.
Shackleford, John E.; and Lewis, Willie J., to Cutter Laboratories, Inc. Flexible conduit with releasable sealing means. 4,361,148, Cl. 128-214.00D.
Shah, Jagdish N.: *See*—
Forsten, Herman H.; Frankenburg, Peter E.; and Shah, Jagdish N., 4,361,619, Cl. 428-234.000.
Shaner, Kenneth H.; Thoman, Bruce J.; Peterson, Mark D.; Fergus, David A.; and Chiang, Karl K., to International Paper Co. Medium density mixed hardwood flake lamina. 4,361,612, Cl. 428-106.000.
Sharrock, Barry, to British Aerospace Public Limited Company. Variable camber wings. 4,361,299, Cl. 244-216.000.
Sheehan, John C.; and Lo, Young S., to Massachusetts Institute of Technology. Carbon analogs of penicillin. 4,361,514, Cl. 260-245.20R.
Shelley, Pierre: *See*—
Platter, Sanford; and Shelley, Pierre, 4,360,966, Cl. 29-603.000.
Shepherd, Charles G., to B. D. Wait Co. Limited. Humidifier. 4,361,523, Cl. 261-92.000.
Sherman, Ralph R.: *See*—
Dubovsky, George S.; Schaefer, Henry A.; and Sherman, Ralph R., 4,361,821, Cl. 333-219.000.
Shibakawa, Riichiro: *See*—
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,361,649, Cl. 435-119.000.
Shima, Seiya; Kuroha, Hiroaki; Ando, Takeki; Kurosawa, Toshiaki; Inaba, Hiromi; and Sakai, Yoshio, to Hitachi, Ltd. Power converter apparatus. 4,361,866, Cl. 363-129.000.
Shimizu, Kajuro: *See*—
Honma, Kazuhiro; Shimizu, Kajuro; Nakatani, Tetsu; and Takenaka, Eiichi, 4,361,830, Cl. 340-146.3AC.
Shipley, Randall S., to Dow Chemical Company, The. Polymerization of olefins in the presence of catalyst prepared from organo zirconium-chromium mixtures. 4,361,685, Cl. 526-114.000.
Shishido, Toetsu: *See*—
Yajima, Seishi; Okamura, Kiyohito; and Shishido, Toetsu, 4,361,679, Cl. 525-389.000.
Yajima, Seishi; Okamura, Kiyohito; and Shishido, Toetsu, 4,361,691, Cl. 528-28.000.
Shoaf, George; and Pearson, David. Electrolysis chamber for hybrid fuel system. 4,361,474, Cl. 204-239.000.
Shockley, James F., to Southern Railway Company. Automatic train-line air brake pressure monitoring system. 4,361,825, Cl. 340-52.00C.
Shono, Masahiro, to Sanyo Electric Co., Ltd. Switching regulator type power supply circuit. 4,361,865, Cl. 363-19.000.
Short, Glyn D.; Spencer, Michael S.; and Whittam, Thomas V., to Imperial Chemical Industries Limited. Olefins. 4,361,715, Cl. 585-640.000.
Shuenn-tzong, Chen, to Miles Laboratories, Inc. Color fixed chromogenic analytical element. 4,361,648, Cl. 435-10.000.
Shumaker, John F.: *See*—
Maurer, Herman J.; and Shumaker, John F., 4,360,982, Cl. 37-141.00R.
Shybut, George T.: *See*—
Lewis, Jack L.; Patrnchak, Carl M.; Lew, William D.; and Shybut, George T., 4,361,142, Cl. 128-80.00C.
Sidline, George B.; Henshaw, John F.; and Elkus, Eugene S., to Service Distributors, Inc. Magnetic card feed mechanism and impactor. 4,361,755, Cl. 235-476.000.
Siedband, Melvin P., to Victoreen, Inc. Radiation monitoring device. 4,361,900, Cl. 378-98.000.
Siemens Aktiengesellschaft: *See*—
Diepers, Heinrich; and Musebeck, Horst, 4,361,775, Cl. 310-248.000.
Ehricke, Claus, 4,361,885, Cl. 370-13.000.
Gibson, John-Philip, 4,361,095, Cl. 104-292.000.
Hanke, Leopold; and Schmelz, Helmut, 4,361,529, Cl. 264-65.000.
Hauptmann, Rudolf, 4,361,840, Cl. 343-7.700.
Keller, Wolfgang, 4,361,716, Cl. 373-147.000.
Kloeber, Peter, 4,361,897, Cl. 375-110.000.
Kunze, Dieter; and Bauer, Josef, 4,361,722, Cl. 174-93.000.
Otremba, Klaus, 4,361,818, Cl. 333-26.000.
Rapp, Karl; and Choschzick, Joachim, 4,361,348, Cl. 285-31.000.
Urban, Gerd; Opitz, Heinrich; and Mages, Gert, 4,361,644, Cl. 430-422.000.
Sigan, John: *See*—
Kochera, Peter G., 4,361,057, Cl. 74-551.400.
Silin, Askold A.: *See*—
Dukhovskoi, Evgeny A.; Kleiman, Alexandr M.; Ponomarev, Ardalion N.; Silin, Askold A.; Skok, Valentina M.; Talroze, Viktor L.; and Khomyakov, Anatoly V., 4,361,596, Cl. 427-41.000.
Sillard, Gilles; and Baril, Michel, to Thomson-CSF. Passive semiconductor power limiter formed on flat structure lines, and an ultra-high frequency circuit using such a limiter. 4,361,819, Cl. 333-109.000.
Simard-Duquesne, Nicole: *See*—
Dvornik, Dushan M.; and Simard-Duquesne, Nicole, 4,361,582, Cl. 424-317.000.
Simonds, Gary L., to Beloit Corporation. Lock or braking mechanism. 4,361,210, Cl. 188-43.000.
Simonotti, Lucio; and Motta, Carlo, to Ing. C. Olivetti & C., S.p.A. Serial printer for objects movable in a predetermined direction. 4,361,086, Cl. 101-93.180.
Simonsson, Sven B., to Aktiebolaget Electrolux. Vacuum cleaner nozzle arrangement. 4,360,948, Cl. 15-373.000.
Simpkins, N. J. Shoe spring device. 4,360,978, Cl. 36-114.000.
Simpson, Jon H., to Minnesota Mining and Manufacturing Company. Sag-resistant compositions. 4,361,676, Cl. 525-118.000.
Singer Company, The: *See*—
Marsh, Walter H. W.; and Kahan, William, 4,361,101, Cl. 112-110.000.
Singh, Balwant; and Henderson, William A., Jr., to American Cyanamid Company. Manufacture of isocyanates. 4,361,518, Cl. 260-453.00P.
Sipos, Tibor; Gander, Robert J.; and Buck, Carl J., to Johnson & Johnson Products, Inc. Sulfonated aromatic formaldehyde condensation polymers as dental plaque barriers. 4,361,547, Cl. 424-56.000.
Sippola, Pertti J., to Ra-Shipping Ltd. Oy. Method for producing dual-phase and zinc-aluminum coated steels from plain low carbon steels. 4,361,448, Cl. 148-15.000.
Sjogren, Alan L.: *See*—
Sjogren, Fred E., 4,361,198, Cl. 177-141.000.
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Skeele, Robert C. Portable refrigerator. 4,361,013, Cl. 62-223.000.
Skoda, William G.: *See*—
Luff, Martin; and Skoda, William G., 4,361,778, Cl. 310-348.000.
Skok, Valentina M.: *See*—
Dukhovskoi, Evgeny A.; Kleiman, Alexandr M.; Ponomarev, Ardalion N.; Silin, Askold A.; Skok, Valentina M.; Talroze, Viktor L.; and Khomyakov, Anatoly V., 4,361,596, Cl. 427-41.000.
Slaback, Travis W.: *See*—
Ellis, Jack T.; and Slaback, Travis W., 4,361,291, Cl. 241-79.000.
Slatis, Par E. V.; and Karaharju, Erkki O. External compression frame for stabilizing unstable pelvic fractures. 4,361,144, Cl. 128-92.00A.
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Faulring, Gloria M.; Fitzgibbon, Alan; and Slish, Frank, 4,361,442, Cl. 75-57.000.
Slocum, Chester D.; and Batty, John R., Jr., to Cordis Corporation. Implant telemetry system. 4,361,153, Cl. 128-419.00P.
Smith, David K.; Harlow, Nigel; and Maxfield, Samuel W., to Henry Balfour & Company Ltd. Floor for lautering vessels. 4,361,080, Cl. 99-277.100.
Smith, Eric: *See*—
Cape, John; and Smith, Eric, 4,361,078, Cl. 92-31.000.
Smith, Francis X.; and Riedhammer, Thomas M., to Bausch & Lomb Incorporated. Contact lens disinfecting and preserving solution (polymeric). 4,361,548, Cl. 424-78.000.
Smith, George F., Jr., to Hergeth, Incorporated. Baling apparatus and method. 4,360,997, Cl. 53-528.000.
Smith, Gordon J., to International Business Machines Corporation. Device for preventing the contamination of ink jet components. 4,361,845, Cl. 346-140.00R.
Smith, Louise W. Corner brush. 4,360,940, Cl. 15-160.000.
Smith, Michael A.: *See*—
Hall, Leslie G.; Larson, David V.; Smith, Michael A.; and Wood, Stuart K., 4,361,296, Cl. 244-54.000.
Smith, Stanley B., Jr.; Schleicher, Robert G.; and Eldred, Edward C., to Instrumentation Laboratory Inc. Automatic sample deposition in flameless analysis. 4,361,401, Cl. 356-36.000.
Smith, W. Novis, Jr.; and Bolton, Nelson P., to Advanced Glass Systems Corp. Method of bending a glass sheet. 4,361,433, Cl. 65-116.000.
Smoot, Lanny S., to Bell Telephone Laboratories, Incorporated. Coin telephone control circuit. 4,361,731, Cl. 179-6.30R.
Smout, Dennis W. S.: *See*—
Bryant, Jack; Howes, John H.; and Smout, Dennis W. S., 4,361,763, Cl. 250-381.000.
Smyth, Robert R. Mechanical automatic transmission. 4,361,060, Cl. 74-866.000.
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Benai, Tommaso; Paoletti, Ugo; and Leoncini, Novello, 4,361,532, Cl. 264-188.000.
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Kalbskopf, Reinhard; and Baumberger, Otto, 4,361,284, Cl. 239-422.000.
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Mongrolle, Yves L., 4,361,175, Cl. 141-283.000.
Societe Anonyme dite: L'Oreal: *See*—
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 4,361,516, Cl. 260-396.00N.
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Natusch, Hans-Jorg, 4,361,083, Cl. 99-483.000.

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Gautier, Raoul L. A., 4,361,235, Cl. 206-527.000.

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Aubry, Jacques A., 4,361,415, Cl. 416-134.00A.

Soclof, Sidney I.; and Elliott, Michael T., to Rockwell International Corporation. Distributed optical parametric amplifier. 4,361,814, Cl. 330-4.900.

Sodeck, Gottfried: *See*—
Kubin, Johann; Peer, Hermann; and Sodeck, Gottfried, 4,360,989, Cl. 47-65.000.

Soderberg, Bengt: *See*—
Hallstedt, Lennart; and Soderberg, Bengt, 4,361,201, Cl. 180-19.00H.

Soeda, Yuji; and Goto, Akio, to Tokico Ltd. Metal container. 4,361,248, Cl. 220-254.000.

Soffa, Albert: *See*—
Elles, Richard J.; Kulicke, Frederick W., Jr.; Sade, Moshe E.; and Soffa, Albert, 4,361,261, Cl. 228-103.000.

Sogabe, Ichita, to Niipondenso Co., Ltd. Electromagnetic actuator. 4,361,309, Cl. 251-137.000.

Solomon, Jeffry A.; and Young, Harold W., Jr., to Dow Chemical Company, The. Process for making a silver catalyst useful in ethylene oxide production. 4,361,504, Cl. 252-463.000.

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Nemes, Sandor; Solymos, Karoly; Barna, Laszlo; Bognar, Tibor; Szigetvari, Jozsef; Vajda, Ferenc; and Tornai, Endre, 4,361,414, Cl. 415-83.000.

Somes, Richard K., to Sperry Corporation. Absolute grain loss monitor. 4,360,998, Cl. 56-10.200.

Song, Sei H., to Magnaflux Corporation. Method using aqueous emulsion having magnetizable particles for detecting flaws in magnetizable workpieces. 4,361,806, Cl. 324-216.000.

Sonnonstine, Terry J.: *See*—
Stofko, John J., Jr.; Kneipp, Kenneth G.; and Sonnonstine, Terry J., 4,361,637, Cl. 430-58.000.

Sony Corporation: *See*—
Hayashi, Tsuneyuki; Ishikawa, Masamichi; and Miwa, Hiromitsu, 4,361,776, Cl. 310-268.000.
Katzfey, Lance J., 4,361,852, Cl. 358-145.000.
Narimatsu, Akihisa; and Ohkubo, Hiroyuki, 4,361,805, Cl. 324-207.000.
Nozawa, Kazuo, 4,361,860, Cl. 360-120.000.
Ohata, Tsumoru, 4,361,627, Cl. 428-425.900.
Sakamoto, Hitoshi, 4,361,857, Cl. 360-77.000.

Soriano, Jorge H. Grocery basket with anti-theft compartment. 4,361,340, Cl. 280-33.99A.

Southern Railway Company: *See*—
Shockley, James F., 4,361,825, Cl. 340-52.00C.

Spademan, Richard G. Sport shoe with a dynamic adjustable cuff assembly. 4,360,979, Cl. 36-121.000.

Spalti, Alfred, to LGZ Landis & Gyr Zug AG. Measuring apparatus for determining the effective value of the power demand of an energy consumer over a period of calculation. 4,361,872, Cl. 364-483.000.

Spann, Michael M.: *See*—
Kern, John W.; Spann, Michael M.; and Hoyer, Wilmer A., 4,361,808, Cl. 324-366.000.

Spapens, Harald H. C. M., to U.S. Philips Corporation. Apparatus housing comprising a number of parallel component boards. 4,361,861, Cl. 361-391.000.

Spartanburg Steel Products, Inc.: *See*—
Davis, James A.; and Koch, Robert C., 4,361,607, Cl. 428-35.000.

Spector, George: *See*—
DeCosa, Charles; and Spector, George, 4,360,947, Cl. 15-323.000.

Spencer, Michael S.: *See*—
Short, Glyn D.; Spencer, Michael S.; and Whittam, Thomas V., 4,361,715, Cl. 585-640.000.

Sperry Corporation: *See*—
Somes, Richard K., 4,360,998, Cl. 56-10.200.

Spiegel, Willi: *See*—
Lessnig, Werner; Metz, Gunter; Spiegel, Willi; Faust, Manfred; and Junkers, Gunter, 4,361,032, Cl. 73-64.400.

Spirig, Walter, to Stoba AG. Manually closable seal. 4,361,351, Cl. 292-321.000.

Spiro, Lloyd W. Vehicle light with fastener arrangement. 4,361,864, Cl. 362-62.000.

Spivack, Bruce D., to PQ Corporation. Spray-dried hollow fibers. 4,361,624, Cl. 428-398.000.

Sprague Electric Company: *See*—
Nagy, Bela G., 4,361,835, Cl. 340-624.000.

Square D Company: *See*—
Lass, John L., 4,361,302, Cl. 248-56.000.

Staar S.A.: *See*—
Schatteman, Etienne A. M., 4,361,859, Cl. 360-96.500.

Stackpole Components Company: *See*—
Ayers, Robert D., 4,361,743, Cl. 200-153.00V.

Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; Pichler, Ludwig; Hoefke, Wolfgang; and Gaida, Wolfram, to Boehringer Ingelheim GmbH. Substituted 2-phenylamino-2-imidazolines and salts thereof. 4,361,575, Cl. 424-273.00R.

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Bomers, Joseph J. P., 4,361,616, Cl. 428-215.000.

Standard Oil Company, The: *See*—
Blaskie, M. W.; Fox, J. R.; and Pesa, F. A., 4,361,711, Cl. 568-909.000.
Blum, Patricia R.; Milberger, Ernest C.; Bremer, Noel J.; and Dria, Dennis E., 4,361,501, Cl. 252-435.000.

Stapleton, John J., to K&R Engineering Sales Corporation. Versatile video CRT display. 4,361,785, Cl. 315-389.000.

Statz, Robert G. Self lubricating bearing. 4,361,367, Cl. 308-78.000.

Stauffer Chemical Company: *See*—
Fancher, Llewellyn W.; and Walker, Francis H., 4,361,439, Cl. 71-106.000.
Felix, Raymond A., 4,361,438, Cl. 71-98.000.

Stefaniak, Phillip S., to Helene Curtis Industries, Inc. Hair roller. 4,361,159, Cl. 132-41.00R.

Steger, John J.: *See*—
Langer, Arthur W.; Steger, John J.; and Burkhardt, Terry J., 4,361,714, Cl. 585-521.000.

Steigerwald Strahltechnik GmbH: *See*—
Hiller, Walther, 4,360,956, Cl. 29-156.50R.

Stein, Age; and Winters, Douglas E. Sheet interfitting section puzzle. 4,361,328, Cl. 273-156.000.

Stein, Friedrich: *See*—
Langseder, Neal; and Stein, Friedrich, 4,361,251, Cl. 220-269.000.

Stemco, Inc.: *See*—
Tsai, Shyan S., 4,361,206, Cl. 181-255.000.

Stepanski, Eugene R.: *See*—
Downing, Gerald T.; Stepanski, Eugene R.; and Wirth, Gary J., 4,361,230, Cl. 206-345.000.

Sterling Drug Inc.: *See*—
Lesher, George Y.; and Gruett, Monte D., 4,361,568, Cl. 424-263.000.
Lesher, George Y.; and Philion, Richard E., 4,361,569, Cl. 424-263.000.
Margetts, George; Andrews, Roderic S.; and Legros, Jean, 4,361,703, Cl. 560-142.000.

Stieh, Bernhard: *See*—
Behrendt, Wilhelm A.; and Stieh, Bernhard, 4,361,573, Cl. 424-267.000.

Stillwell, HarryF., to Honeywell Inc. Bi-phase modulator/demodulator. 4,361,817, Cl. 332-9.00T.

Stoba AG: *See*—
Spirig, Walter, 4,361,351, Cl. 292-321.000.

Stobb, Inc.: *See*—
Stobb, Walter J., 4,361,318, Cl. 271-202.000.

Stobb, Walter J., to Stobb, Inc. Apparatus and method for controlling sheet stacker speed. 4,361,318, Cl. 271-202.000.

Stockdale, Roy, to Napco Security Systems, Inc. Seismic sensor apparatus. 4,361,740, Cl. 200-61.45R.

Stoddard, David C. F., to Abrams Fixture Corporation. Hanger support. 4,361,241, Cl. 211-123.000.

Stofka, Edward J.: *See*—
Criss, Russell C.; and Stofka, Edward J., 4,361,751, Cl. 219-522.000.

Stofko, John J., Jr.; Kneipp, Kenneth G.; and Sonnonstine, Terry J., to Minnesota Mining and Manufacturing Company. Electron bis-benzocarbazole donor compounds and photoconductive charge transport materials. 4,361,637, Cl. 430-58.000.

Stolarczyk, Gregory. Fastener with improved torque transfer surfaces. 4,361,412, Cl. 411-402.000.

Stone, Wayne B., Jr., to Wood Manufacturing Co., Inc. Apparatus for reducing oxidation of coffee. 4,361,257, Cl. 222-464.000.

Stoner, Graham A.: *See*—
Meyers, Marion D.; and Stoner, Graham A., 4,361,435, Cl. 71-66.000.

Storimans, Franciscus J. A. Machine for forming the leads of electronic components. 4,361,173, Cl. 140-1.000.

Streitberger, Hans-Joachim; Lessmeister, Peter; and Zdahl, Norbert, to BASF Farben & Fasern AG. Aqueous dispersion with finely divided, non ionic plastics. 4,361,660, Cl. 523-404.000.

Stricker, Herbert; Freund, Bernhard; Harwalik, Heribert; Rominger, Karl L.; Darda, Siegfried; Haselbarth, Volkmar; Arndts, Dietrich; Bechtel, Wolf D.; Bozler, Gerhard; Brickl, Rolf; and Gruber, Peter, to Boehringer Ingelheim GmbH. Retard form of pharmaceuticals with insoluble porous diffusion coatings. 4,361,546, Cl. 424-19.000.

Strom, Robert M., to Dow Chemical Company, The. Formation of biphenols. 4,361,708, Cl. 568-730.000.

Sturm, Elmar: *See*—
Buhler, Niklaus; Baumann, Marcus; Bellus, Daniel; and Sturm, Elmar, 4,361,576, Cl. 424-274.000.

Stuvecke, Claus P. Stretcher frame FR decorative materials. 4,361,180, Cl. 160-377.000.

Sub-Surface Tools, Inc.: *See*—
Vinson, Joe D., 4,361,353, Cl. 294-86.100.

Sueda, Keizi: *See*—
Kandachi, Takayoshi; Sueda, Keizi; and Suzuki, Minoru, 4,361,431, Cl. 65-99.500.

Sugama, Toshifumi; Kukacka, Lawrence E.; and Horn, William H., to United States of America, Energy. Quick setting water-compatible furfuryl alcohol polymer concretes. 4,361,670, Cl. 524-811.000.

Sugie, Osamu; Hachiga, Takasi; and Iyoda, Michio, to Nippondenso Co., Ltd. Ignition system for internal combustion engines. 4,361,129, Cl. 123-622.000.

Sugiyama, Matsuyoshi: *See*—
Morishita, Teru; Sugiyama, Matsuyoshi; and Suzuki, Toshikazu, 4,361,287, Cl. 239-703.000.

Sumi, Kenshiro: *See*—
Miyoshi, Keisuke; and Sumi, Kenshiro, 4,361,382, Cl. 350-126.000.

Sumida, Seizo: *See*—
Hashimoto, Shunichi; Oshio, Hiromichi; Mizutani, Masato; Sanemitsu, Yuzuru; Katoh, Haruhiko; Sumida, Seizo; and Ooishi, Tadashi, 4,361,437, Cl. 71-93.000.

Sumitomo Chemical Company, Limited: *See*—
Hashimoto, Shunichi; Oshio, Hiromichi; Mizutani, Masato; Sanemitsu, Yuzuru; Katoh, Haruhiko; Sumida, Seizo; and Ooishi, Tadashi, 4,361,437, Cl. 71-93.000.

Sumitomo Naugatuck Co., Ltd.: *See*—
Minematsu, Hiroyuki; Matsumoto, Kojiro; Saeki, Tadashi; and Kishi, Akira, 4,361,684, Cl. 526-87.000.

Sumitomo Rubber Industries, Ltd.: *See*—
Furukawa, Hiroshi; and Tsuyuri, Takehiko, 4,361,677, Cl. 525-133.000.
Nakahama, Kozo; Kadomaru, Kazuo; and Okaniwa, Masuzo, 4,361,454, Cl. 156-133.000.

Sumner, John H., to Burlington Industries, Inc. Open end spun slub yarn method and apparatus. 4,361,007, Cl. 57-409.000.

Sunada, Yoichi; Takahashi, Yoshikazu; and Takitani, Masaru, to Toyo Stauffer Chemical Co., Ltd Titanium trichloride catalytic component and method for homo- or co-polymerization of α-olefin. 4,361,498, Cl. 252-429.00B.

Sunbird Corporation: *See*—
Nordell, Daniel E., 4,361,793, Cl. 318-729.000.

Suncor Inc.: *See*—
Bierwith, Stanton F.; and Bierwith, Robert S., 4,360,981, Cl. 37-141.00T.

Sundstrand Corporation: *See*—
Blain, Edward S., 4,361,014, Cl. 62-237.000.

SUNTEC Sonnenschutztechnik GmbH: *See*—
Benthin, Siegfried, 4,361,179, Cl. 160-176.00R.

Sutter, Hans-Rudolf, to Bulova Watch Company, Inc. Electronic watch having braked stepping motor. 4,361,409, Cl. 368-80.000.

Suzuki, Mamoru: *See*—
Takahashi, Yoshinobu; Tokushima, Yasuo; Ogata, Kentarou; Suzuki, Mamoru; and Ito, Zyouzi, 4,361,605, Cl. 427-424.000.

Suzuki, Minoru: *See*—
Kandachi, Takayoshi; Sueda, Keizi; and Suzuki, Minoru, 4,361,431, Cl. 65-99.500.

Suzuki, Togi; Tsunawaki, Kiyokazu; Wada, Osamu; and Kimura, Akio, to Teijin Limited. Hollow water-absorbing polyester filaments and a process for producing the same. 4,361,617, Cl. 428-224.000.

Suzuki, Toshikazu: *See*—
Fukuda, Daiki; Morishita, Teru; and Suzuki, Toshikazu, 4,361,288, Cl. 239-703.000.
Morishita, Teru; Sugiyama, Matsuyoshi; and Suzuki, Toshikazu, 4,361,287, Cl. 239-703.000.

Suzuki, Toshitsugu, to Hitachi, Ltd.; and Tokico Ltd. Oil-cooled compressor. 4,361,417, Cl. 417-13.000.

Suzuki, Tsutae: *See*—
Kashiwagi, Yoshiyuki; Tanigaki, Shuzo; Kondo, Naoki; and Suzuki, Tsutae, 4,361,742, Cl. 200-144.00B.

Suzuki, Yoshitsugu; Iizuka, Syogo; Kajiyama, Shigeo; Usui, Kenji; and Kobayashi, Masahiro, to Yazaki Corporation. Wire harness. 4,360,962, Cl. 29-564.400.

Svoboda, Josef, to TMC Corporation. Safety-straplike connecting member. 4,361,345, Cl. 280-637.000.

Swanson, Wade H.: *See*—
Wauters, Ronald P.; Kenyon, Ralph E.; Sarma, Monoj K.; Layton, Larry L.; Swanson, Wade H.; and Hibler, Diane E., 4,361,589, Cl. 426-270.000.

Swedish University of Agricultural Sciences, The: *See*—
Sall, Hans O., 4,361,222, Cl. 198-519.000.

Swetnam, Larry D.; Casada, James H.; and Walton, Linus R., to University of Kentucky Research Foundation, The. Stick holder and deposition device. 4,361,002, Cl. 56-27.500.

Swift, Harold E.: *See*—
Marcelin, George; Vogel, Roger F.; and Swift, Harold E., 4,361,705, Cl. 368-462.000.

Switchcraft, Inc.: *See*—
Bailey, James R.; and Herron, John R., 4,361,375, Cl. 339-91.00R.

Sylvestre, Roland; and Paradis, Vallier. Apparatus and method for draining engine crankcase. 4,361,207, Cl. 184-1.500.

Synthelabo: *See*—
Kaplan, Jean P., 4,361,583, Cl. 424-319.000.

Szego, Andrew, to Vulcan Industrial Packaging Limited. Method and apparatus for providing a traversable pathway through a pool of flammable fluid. 4,361,190, Cl. 169-48.000.

Szente, Andre: *See*—
Branca, Quirico; Fischli, Albert E.; and Szente, Andre, 4,361,511, Cl. 260-239.30D.

Szigetvari, Jozsef: *See*—
Nemes, Sandor; Solymos, Karoly; Barna, Laszlo; Bognar, Tibor; Szigetvari, Jozsef; Vajda, Ferenc; and Tornai, Endre, 4,361,414, Cl. 415-83.000.

Takagi, Takeji, to Olympus Optical Company Ltd. Scirroscope. 4,361,139, Cl. 128-6.000.

Takahashi, Fuminobu, to Hitachi, Ltd. Digital type ultrasonic holography apparatus. 4,361,042, Cl. 73-603.000.

Takahashi, Yoshikazu: *See*—
Sunada, Yoichi; Takahashi, Yoshikazu; and Takitani, Masaru, 4,361,498, Cl. 252-429.00B.

Takahashi, Yoshinobu; Tokushima, Yasuo; Ogata, Kentarou; Suzuki, Mamoru; and Ito, Zyouzi, to Toyota Jidosha Kabushiki Kaisha. Apparatus used in surface treatment and a method of surface treatment using said apparatus. 4,361,605, Cl. 427-424.000.

Takaku, Sakae; Matsuura, Fumiaki; Mori, Takashi; Murakami, Yasushi; Kataoka, Shigeyuki; Takeda, Yasuhisa; Yamashita, Yasuhiro; Takeda, Yumiko; Matsuno, Takashi; Mizuno, Koji; Kaiho, Shinichi; Yamazaki, Tamotsu; Hata, Shun-ichi; and Takanashi, Shigeru, to Chugai Seiyaku Kabushiki Kaisha. Tetrahydronicotinamide derivative, pharmaceutical compositions and use. 4,361,572, Cl. 424-266.000.

Takanashi, Shigeru: *See*—
Takaku, Sakae; Matsuura, Fumiaki; Mori, Takashi; Murakami, Yasushi; Kataoka, Shigeyuki; Takeda, Yasuhisa; Yamashita, Yasuhiro; Takeda, Yumiko; Matsuno, Takashi; Mizuno, Koji; Kaiho, Shinichi; Yamazaki, Tamotsu; Hata, Shun-ichi; and Takanashi, Shigeru, 4,361,572, Cl. 424-266.000.

Takeda Chemical Industries, Ltd.: *See*—
Asai, Mitsuko; Nakahama, Kazuo; and Izawa, Motowo, 4,361,650, Cl. 435-119.000.

Takeda, Yasuhisa: *See*—
Takaku, Sakae; Matsuura, Fumiaki; Mori, Takashi; Murakami, Yasushi; Kataoka, Shigeyuki; Takeda, Yasuhisa; Yamashita, Yasuhiro; Takeda, Yumiko; Matsuno, Takashi; Mizuno, Koji; Kaiho, Shinichi; Yamazaki, Tamotsu; Hata, Shun-ichi; and Takanashi, Shigeru, 4,361,572, Cl. 424-266.000.

Takeda, Yumiko: *See*—
Takaku, Sakae; Matsuura, Fumiaki; Mori, Takashi; Murakami, Yasushi; Kataoka, Shigeyuki; Takeda, Yasuhisa; Yamashita, Yasuhiro; Takeda, Yumiko; Matsuno, Takashi; Mizuno, Koji; Kaiho, Shinichi; Yamazaki, Tamotsu; Hata, Shun-ichi; and Takanashi, Shigeru, 4,361,572, Cl. 424-266.000.

Takenaka, Eiichi: *See*—
Honma, Kazuhiro; Shimizu, Kajuro; Nakatani, Tetsu; and Takenaka, Eiichi, 4,361,830, Cl. 340-146.3AC.

Takenaka, Hiroshi: *See*—
Koroyasu, Arata; and Takenaka, Hiroshi, 4,361,311, Cl. 254-200.000.

Takitani, Masaru: *See*—
Sunada, Yoichi; Takahashi, Yoshikazu; and Takitani, Masaru, 4,361,498, Cl. 252-429.00B.

Talaba, Mark: *See*—
Maglia, Andrew R., deceased, 4,361,130, Cl. 125-36.000.

Talroze, Viktor L.: *See*—
Dukhovskoi, Evgeny A.; Kleiman, Alexandr M.; Ponomarev, Ardalion N.; Silin, Askold A.; Skok, Valentina M.; Talroze, Viktor L.; and Khomyakov, Anatoly V., 4,361,596, Cl. 427-41.000.

Tamashasky, Joseph A.: *See*—
Herman, Carl H.; Johnson, Anderson F., Jr.; Large, Donald M.; and Tamashasky, Joseph A., 4,360,995, Cl. 53-437.000.

Tan, King-Han; and de Greef, Jan L., to Borg-Warner Corporation. Compatible polystyrene blends. 4,361,675, Cl. 525-71.000.

Tanabe, Kenzo, to Matsushita Electric Industrial Co., Ltd. Multiplex signal receiver. 4,361,728, Cl. 179-1.0GS.

Tanaka, Minoru: *See*—
Terahara, Akira; Hamano, Kiyoshi; Tsujita, Yoshio; and Tanaka, Minoru, 4,361,515, Cl. 549-292.000.

Tandler, Peter: *See*—
Schopper, Bernd; and Tandler, Peter, 4,361,361, Cl. 303-6.00C.

Tanigaki, Shuzo: *See*—
Kashiwagi, Yoshiyuki; Tanigaki, Shuzo; Kondo, Naoki; and Suzuki, Tsutae, 4,361,742, Cl. 200-144.00B.

Tanner, Gary D., to Zimmer USA, Inc. Scoliosis transverse traction assembly. 4,361,141, Cl. 128-69.000.

Tanrikut, Ibrahim S.; Wagner, Walter B.; Segalman, Irwin; and Goldberg, Perry, to United Technologies Corporation. Combustor liner construction. 4,361,010, Cl. 60-757.000.

Taplin, Lael B.; and Teitelbaum, Bernard R., to United States of America, Army. Integrating angular accelerometer. 4,361,040, Cl. 73-503.000.

Tashiro, Chiaki: *See*—
Munakata, Tomohiko; Tashiro, Chiaki; and Maruyama, Yutaka, 4,361,579, Cl. 424-287.000.

Tatabanyai Szenbanyak: *See*—
Nemes, Sandor; Solymos, Karoly; Barna, Laszlo; Bognar, Tibor; Szigetvari, Jozsef; Vajda, Ferenc; and Tornai, Endre, 4,361,414, Cl. 415-83.000.

Tatemoto, Masayoshi; and Morita, Shigeru, to Daikin Kogyo Co., Ltd. Liquid fluorine-containing polymer and its production with iodinated compound. 4,361,678, Cl. 528-374.000.

Taufiq, Farook, to Prince Company, Inc., The. The high protein pasta product. 4,361,591, Cl. 426-557.000.

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TDK Electronics Co., Ltd.: *See*—
Isobe, Yukihiro; Okuyama, Kiyotaka; Hosaka, Akihiko; and Kobayashi, Hideo, 4,361,621, Cl. 428-329.000.

Tecator AB: *See*—
Asp, Nils-Georg, 4,361,646, Cl. 435-4.000.

Tech-Tran, Inc.: *See*—
Fitzgerald, Harry G., 4,361,151, Cl. 128-285.000.

Teetz, Volker; Uhmann, Rainer; and Knapp, Rudolf, to Hoechst Aktiengesellschaft. Chromatograph for pressure chromatography. 4,361,482, Cl. 210-198.200.

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Suzuki, Togi; Tsunawaki, Kiyokazu; Wada, Osamu; and Kimura, Akio, 4,361,617, Cl. 428-224.000.

Teitelbaum, Bernard R.: *See—*
Taplin, Lael B.; and Teitelbaum, Bernard R., 4,361,040, Cl. 73-503.000.
Telecommunications Radioelectriques et Telephoniques T.R.T.: *See—*
Bonnerot, Georges, 4,361,893, Cl. 375-27.000.
Telediffusion de France: *See—*
Remy, Maurice A.; Poncin, Jacques; and Rogel, Pierre R., 4,361,853, Cl. 358-167.000.
Teledyne Industries, Inc.: *See—*
McClanahan, Buford A.; Udolf, Herb W.; Zander, Charles R.; and Thresher, Robert W., 4,361,444, Cl. 134-3.000.
Raleigh, William F.; and Keegan, Patrick J., 4,361,274, Cl. 236-21.00B.
Teller, Howard S., Jr. Ground loop injection VHF tuner. 4,361,910, Cl. 455-320.000.
Temmler AG: *See—*
Behrendt, Wilhelm A.; and Stieh, Bernhard, 4,361,573, Cl. 424-267.000.
Temple, Davis L., Jr.; Yevich, Joseph P.; and Lobeck, Walter G., Jr., to Mead Johnson & Company. 2-[4-[(4,4-Dialkyl-2,6-piperidinedion-1-yl)butyl]-1-piperazinyl]pyridines. 4,361,565, Cl. 424-250.000.
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Miller, Robert S.; Hoch, Samuel; and Ceprini, Mario Q., 4,361,665, Cl. 524-289.000.
Terahara, Akira; Hamano, Kiyoshi; Tsujita, Yoshio; and Tanaka, Minoru, to Sankyo Company, Limited. Antihyperlipemic dihydro-ML-236B derivatives, their preparation and use. 4,361,515, Cl. 549-292.000.
Teraoku, Hiroshi; and Yamaguchi, Hideki, to Hitachi Ltd.; and Ohbayashi-Gumi, Ltd. Hopper for storing free flowing solid material. 4,361,254, Cl. 222-196.000.
Texaco Inc.: *See—*
Eng, King D., 4,360,957, Cl. 29-157.00R.
Texas Botanical Research, Company: *See—*
Saunders, Tom R., 4,361,554, Cl. 424-180.000.
Texas Instruments Incorporated: *See—*
Harper, Leroy D.; and Oliver, Arthur B., 4,361,873, Cl. 364-707.000.
Th. Kieserling & Albrecht GmbH K.G.: *See—*
Hartkopf, Heinz, 4,361,022, Cl. 72-99.000.
Theisen, Gunter; Eppich, Alfred; and Hochleitner, Rudolf H., to Leipold & Eppich KG. Silicate coating for heat-resistant objects, said coating having a heat transfer function; objects having said coating; and process for producing such a coating. 4,361,622, Cl. 428-363.000.
Theriault, Gerald E., to RCA Corporation. Pre-tuner tracking traps responsive to a tuning voltage. 4,361,909, Cl. 455-286.000.
Thiokol Corporation: *See—*
Munson, William O., 4,361,450, Cl. 149-19.910.
Thir, Basil: *See—*
Newkirk, David D.; Login, Robert B.; and Thir, Basil, 4,361,623, Cl. 428-394.000.
Thoman, Bruce J.: *See—*
Shaner, Kenneth H.; Thoman, Bruce J.; Peterson, Mark D.; Fergus, David A.; and Chiang, Karl K., 4,361,612, Cl. 428-106.000.
Thomas, Leslie P., to Diamond International Corporation. Egg tray. 4,361,263, Cl. 229-2.5EC.
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Bings, Hubert; Kampf, Fritz; Thome, Roland; Wargalla, Gerhard; Winkhaus, Gunter; Pietsch, Hartmut; Turke, Wolfgang; and Fischer, Peter, 4,361,541, Cl. 423-20.000.
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Farrell, Joseph P.; and Thompson, Chester C., Jr., 4,361,812, Cl. 328-233.000.
Thompson, Robert L.; and Scotcher, Douglas E., to Nu-View Pty. Ltd. Retention clip. 4,360,943, Cl. 15-250.420.
Thomson-CSF: *See—*
Coussot, Gerard; and Hartemann, Pierre, 4,361,050, Cl. 73-861.470.
Felix, Pierre; and Guyot, Lucien, 4,361,783, Cl. 315-374.000.
Resneau, Jean-Claude; Doyen, Jean; and Ribier, Robert, 4,361,720, Cl. 174-16.0HS.
Sillard, Gilles; and Baril, Michel, 4,361,819, Cl. 333-109.000.
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Thyroid Diagnostics, Inc.: *See—*
Deutsch, Marshall E.; and Mead, Louis W., 4,361,537, Cl. 422-56.000.
Thyssen Industrie AG: *See—*
Block, Siegmar, 4,361,075, Cl. 91-420.000.
Timme, Robert W.: *See—*
Dubbelday, Pieter S.; and Timme, Robert W., 4,361,879, Cl. 367-141.000.
Timothy, Earle J.: *See—*
Davis, Ray E., Jr.; Becker, Richard J.; Foster, Robert G.; Westkamper, Michael J.; Timothy, Earle J.; and Johnson, Richard H., 4,361,792, Cl. 318-729.000.
TMC Corporation: *See—*
Svoboda, Josef, 4,361,345, Cl. 280-637.000.
Toda, Setsuo, to Aida Engineering Ltd. Work feed apparatus in a press. 4,361,413, Cl. 414-752.000.
Tohme, Ricardo J. Poultry feeder with automatic cutoff. 4,361,117, Cl. 119-52.00B.
Tokico Ltd.: *See—*
Soeda, Yuji; and Goto, Akio, 4,361,248, Cl. 220-254.000.
Suzuki, Toshitsugu, 4,361,417, Cl. 417-13.000.
Tokita, Yoshihiro, to Kubota, Ltd. Cooling apparatus of combustion chambers for water-cooled engines. 4,361,118, Cl. 123-41.150.
Tokushima, Yasuo: *See—*
Takahashi, Yoshinobu; Tokushima, Yasuo; Ogata, Kentarou; Suzuki, Mamoru; and Ito, Zyouzi, 4,361,605, Cl. 427-424.000.
Tolman, Richard L.: *See—*
Rasmusson, Gary H.; and Tolman, Richard L., 4,361,699, Cl. 544-277.000.
Tolmie, Robert J., Jr., to Pitney Bowes Inc. System for extending the voltage range of a phase-fired triac controller. 4,361,798, Cl. 323-324.000.
Tomaswick, Kathleen M.: *See—*
Angus, John C.; Tomaswick, Kathleen M.; and Landau, Uziel, 4,361,641, Cl. 430-313.000.
Tomi, Pavel: *See—*
Pop, Grigore; Ivanus, Gheorghe; Boteanu, Silvia; Tomi, Pavel; and Pop, Ecaterina, 4,361,502, Cl. 252-455.00Z.
Tomikazu, Osaka: *See—*
Tomokazu, Otsuki; Tomikazu, Osaka; and Minoru, Otsuka, 4,360,993, Cl. 52-365.000.
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Tomy Kogyo Company, Inc.: *See—*
Kurita, Toshiaki; and Mizunuma, Masanori, 4,361,327, Cl. 273-119.00R.
Tone, Junsuke: *See—*
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,361,649, Cl. 435-119.000.
Toombs, Gary C.: *See—*
Gallusser, David O.; Hemmer, Valentine J.; and Toombs, Gary C., 4,361,373, Cl. 339-89.00M.
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Torck, Bernard: *See—*
Derrien, Michel; Cosyns, Jean; and Torck, Bernard, 4,361,422, Cl. 44-56.000.
Torel, Inc.: *See—*
Clark, Leebert D., 4,361,258, Cl. 224-150.000.
Torigai, Akiyoshi: *See—*
Sawada, Takamasa; Torigai, Akiyoshi; and Morikawa, Teruo, 4,361,399, Cl. 355-75.000.
Torii, Soichi, to Torii Winding Machine Co., Ltd. Mechanism for stopping a circular loom during weaving operation. 4,361,172, Cl. 139-371.000.
Torii Winding Machine Co., Ltd.: *See—*
Torii, Soichi, 4,361,172, Cl. 139-371.000.
Torikai, Eiichi; Kawami, Youji; and Wakabayashi, Noboru, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Method for production of positive electrode for electrolysis of water. 4,361,602, Cl. 427-123.000.
Tornai, Endre: *See—*
Nemes, Sandor; Solymos, Karoly; Barna, Laszlo; Bognar, Tibor; Szigetvari, Jozsef; Vajda, Ferenc; and Tornai, Endre, 4,361,414, Cl. 415-83.000.
Toro Company, The: *See—*
Friberg, Nathan J., 4,361,000, Cl. 56-13.400.
Torrani, Roberto. Manual torches for TIG welding. 4,361,747, Cl. 219-75.000.
Tosco Corporation: *See—*
Firth, Donald, 4,361,333, Cl. 277-12.000.
Toth, Alexander: *See—*
Johnson, David E.; and Toth, Alexander, 4,361,746, Cl. 219-70.000.
Towmotor Corporation: *See—*
Leskoverc, Edward V.; and Schwehr, Richard A., 4,361,741, Cl. 200-85.00A.
Melocik, Grant C., 4,361,788, Cl. 318-83.000.
Towse, Andrew C.: *See—*
Barber, Tommie L.; Korodi, Miklos B.; Davis, Steven J.; Schuldt, David A.; Christenson, Paul E.; Towse, Andrew C.; Jones, Donald S.; and Roh, David J., 4,361,730, Cl. 179-5.00R.
Toyo Seikan Kaisha, Limited: *See—*
Hirota, Kazumi; and Matsuoka, Kikuo, 4,361,020, Cl. 72-57.000.
Toyo Stauffer Chemical Co., Ltd.: *See—*
Sunada, Yoichi; Takahashi, Yoshikazu; and Takitani, Masaru, 4,361,498, Cl. 252-429.00B.
Toyoda Koki Kabushiki Kaisha: *See—*
Honaga, Susumu; and Sato, Akihiko, 4,361,166, Cl. 137-117.000.
Toyota Jidosha Kabushiki Kaisha: *See—*
Takahashi, Yoshinobu; Tokushima, Yasuo; Ogata, Kentarou; Suzuki, Mamoru; and Ito, Zyouzi, 4,361,605, Cl. 427-424.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Fukuda, Daiki; Morishita, Teru; and Suzuki, Toshikazu, 4,361,288, Cl. 239-703.000.
Igarashi, Isao, 4,361,200, Cl. 180-14.00R.
Igashira, Toshihiko; Ishida, Yasuhiko; Nomura, Ken; and Abe, Seiko, 4,361,125, Cl. 123-549.000.
Kamiya, Sigeru; Wakayama, Junji; Hayashi, Nobutoshi; Noguchi, Hiroshi; Uchida, Kenichi; and Mori, Nobuhisa, 4,361,028, Cl. 73-28.000.
Morishita, Teru; Sugiyama, Matsuyoshi; and Suzuki, Toshikazu, 4,361,287, Cl. 239-703.000.
Sakakibara, Yasuyuki; Kawai, Hisasi; Sakurai, Kazuhiro; and Hattori, Kyo, 4,361,164, Cl. 137-14.000.
Transkrit Corporation: *See—*
Neubauer, Frank, 4,361,269, Cl. 229-69.000.

Trares, Bernard F.; and Nichols, Robinson F., to B.F. Goodrich Company, The. Pneumatic deicer. 4,361,298, Cl. 244-134.00A.
Travis, Jack R., to Anchor Hocking Corporation. Display package and the like. 4,361,226, Cl. 206-45.310.
Treglio, James R., to General Dynamics Convair Division. Merged ion-electron particle beam for space applications. 4,361,761, Cl. 250-251.000.
Trowsdale, Larry S., to Kerr-McGee Corporation. Borehole survey method and apparatus for drilling substantially horizontal boreholes. 4,361,192, Cl. 175-45.000.
Truax, Bruce E.: *See*—
Banks, Edward L.; Truax, Bruce E.; and Watkins, Laurence S., 4,361,643, Cl. 430-396.000.
Truelock, Donald E., to Kay Laboratories, Inc. Supercooled fluids and methods of producing such supercooled fluids. 4,361,491, Cl. 252-70.000.
Trutna, William R. Process for using cocurrent contacting distillation columns. 4,361,469, Cl. 203-99.000.
Tsai, Shyan S., to Stemco, Inc. Exhaust muffler including venturi tube. 4,361,206, Cl. 181-255.000.
Tscheppe, Andrew, to Risdon Corporation. High vacuum processing system having improved recycle draw-down capability under high humidity ambient atmospheric conditions. 4,361,418, Cl. 417-54.000.
Tsuda, Takeshi: *See*—
Kawamata, Motoo; Ohshima, Kazushi; Onofusa, Mitsuo; Kudoh, Akihide; Kotani, Makoto; and Tsuda, Takeshi, 4,361,709, Cl. 568-804.000.
Tsujita, Yoshio: *See*—
Terahara, Akira; Hamano, Kiyoshi; Tsujita, Yoshio; and Tanaka, Minoru, 4,361,515, Cl. 549-292.000.
Tsukuda, Kiyoshi, to Hitachi, Ltd. Lateral type semiconductor devices with enlarged, large radii collector contact regions for high reverse voltage. 4,361,846, Cl. 357-20.000.
Tsunawaki, Kiyokazu: *See*—
Suzuki, Togi; Tsunawaki, Kiyokazu; Wada, Osamu; and Kimura, Akio, 4,361,617, Cl. 428-224.000.
Tsutsumi, Masataka: *See*—
Davis, William F.; and Tsutsumi, Masataka, 4,361,240, Cl. 209-674.000.
Tsuyuri, Takehiko: *See*—
Furukawa, Hiroshi; and Tsuyuri, Takehiko, 4,361,677, Cl. 525-133.000.
Tuneski, Richard J.; and Frisbey, Robert M. Beverage container lid. 4,361,249, Cl. 220-254.000.
Tungler, Antal: *See*—
Mathe, Tibor; Tungler, Antal; and Petro, Jozsef, 4,361,500, Cl. 252-430.000.
Tunick, Abraham L., to Karmelkorn Shoppes, Inc. Dual use cushion and container. 4,361,356, Cl. 297-129.000.
Turke, Wolfgang: *See*—
Bings, Hubert; Kampf, Fritz; Thome, Roland; Wargalla, Gerhard; Winkhaus, Gunter; Pietsch, Hartmut; Turke, Wolfgang; and Fischer, Peter, 4,361,541, Cl. 423-20.000.
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Almond, David R.; Baggett, David; and Turner, Colin, 4,361,001, Cl. 56-12.800.
Tyler, Keith A., to Goodyear Tire & Rubber Company, The. Processable silicone rubber composition. 4,361,655, Cl. 521-47.500.
Tyler Refrigeration Corporation: *See*—
Ibrahim, Fayez F., 4,361,012, Cl. 62-82.000.
Tylko, Jozef K., to Plasma Holdings N.V. Treatment of matter in low temperature plasmas. 4,361,441, Cl. 75-10.00R.
UCB Societe Anonyme: *See*—
Heiremans, Robert; Jacobs, Roland; and D'Hondt, Marc, 4,361,237, Cl. 206-631.000.
Uchida, Kenichi: *See*—
Kamiya, Sigeru; Wakayama, Junji; Hayashi, Nobutoshi; Noguchi, Hiroshi; Uchida, Kenichi; and Mori, Nobuhisa, 4,361,028, Cl. 73-28.000.
Uchida, Tohru, to Konishiroku Photo Industry Co., Ltd. Collecting apparatus for scattering toner. 4,361,396, Cl. 355-15.000.
Uchiyama, Masayuki, to Nippon Seiko Kabushiki Kaisha. Track guide linear motion bearing device. 4,361,366, Cl. 308-6.00C.
Udolf, Herb W.: *See*—
McClanahan, Buford A.; Udolf, Herb W.; Zander, Charles R.; and Thresher, Robert W., 4,361,444, Cl. 134-3.000.
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Ueno, Sadayasu: *See*—
Arima, Hideo; Ito, Mituko; Ikegami, Akira; Ueno, Sadayasu; Sato, Kanemasa; and Nishimura, Yutaka, 4,361,597, Cl. 427-53.100.
Uhmann, Rainer: *See*—
Teetz, Volker; Uhmann, Rainer; and Knapp, Rudolf, 4,361,482, Cl. 210-198.200.
Ulicny, Thomas A., to GSE, Inc. Overload protection for a weigh scale having a flexure beam. 4,361,199, Cl. 177-154.000.
UMC Industries, Inc.: *See*—
Johnson, Raymond A., 4,361,161, Cl. 133-3.00R.
Umeda, Junichi: *See*—
Nakamura, Michiharu; Hirao, Motohisa; Yamashita, Shigeo; Fukuzawa, Tadashi; and Umeda, Junichi, 4,361,887, Cl. 372-50.000.
Union Carbide Corporation: *See*—
Faulring, Gloria M.; Fitzgibbon, Alan; and Slish, Frank, 4,361,442, Cl. 75-57.000.
Weinberg, Kurt; and Johnson, Gordon C., 4,361,694, Cl. 528-279.000.
Uniroyal, Inc.: *See*—
Chlebowski, Edmund M., 4,360,961, Cl. 29-460.000.
United McGill Corporation: *See*—
McVay, Robert D.; and Schaeufele, Herman J., 4,361,021, Cl. 72-71.000.
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Army: *See*—
Allen, Henry C., 4,361,526, Cl. 264-3.00C.
Bailey, Escar L., 4,361,054, Cl. 74-5.60D.
Bosserman, David A., 4,361,384, Cl. 350-174.000.
Burns, Bruce P.; and Kirkendall, Richard D., 4,360,954, Cl. 29-1.230.
Buser, Rudolph G.; Rohde, Robert S.; and Nomiyama, Neal T., 4,361,911, Cl. 455-605.000.
Callender, Robert E.; and Montgomery, James T., 4,361,011, Cl. 62-3.000.
Carlson, Donald J.; Neumeyer, Martin J.; O'Rourke, Glenn; and Waid, Roger K., 4,361,071, Cl. 89-1.815.
Gutleber, Frank S., 4,361,886, Cl. 370-69.100.
Rodgers, Aubrey, 4,361,760, Cl. 250-231.0GY.
Taplin, Lael B.; and Teitelbaum, Bernard R., 4,361,040, Cl. 73-503.000.
Commerce: *See*—
Johnson, Christian E., Sr., 4,361,630, Cl. 428-613.000.
Energy: *See*—
Anderson, Robert C.; Jones, Jack M.; and Kollie, Thomas G., 4,361,447, Cl. 148-11.50F.
Franks, Larry A.; and Lutz, Stephen S., 4,361,765, Cl. 250-486.100.
Gray, Joe W.; Alger, Terry W.; and Lord, David E., 4,361,400, Cl. 356-23.000.
Johnson, Larry C., 4,361,889, Cl. 372-95.000.
Kupperman, David S.; and Reimann, Karl J., 4,361,044, Cl. 73-623.000.
Logan, Clinton M.; and Garibaldi, Jack L., 4,361,332, Cl. 277-3.000.
Metz, Philip D., 4,361,135, Cl. 126-437.000.
Piper, Thomas C., 4,361,041, Cl. 73-579.000.
Sugama, Toshifumi; Kukacka, Lawrence E.; and Horn, William H., 4,361,670, Cl. 524-811.000.
Navy: *See*—
Dubbelday, Pieter S.; and Timme, Robert W., 4,361,879, Cl. 367-141.000.
McMahan, Robert K., Jr., 4,361,383, Cl. 350-162.120.
U.S. Philips Corporation: *See*—
Brons, Hermanus, 4,361,780, Cl. 313-222.000.
Cassel, Knut E.; and Molin, Bengt T., 4,361,841, Cl. 343-754.000.
Franssen, Nico V., deceased; and de Haan, Friedrich J., administrator, 4,361,727, Cl. 179-1.00J.
Kaplinsky, Cecil H., 4,361,868, Cl. 364-200.000.
Meyer, Wolfgang; and Schilz, Wolfram, 4,361,801, Cl. 324-58.50R.
Parmentier, Paul, 4,361,756, Cl. 235-487.000.
Spapens, Harald H. C. M., 4,361,861, Cl. 361-391.000.
van der Steen, Gerardus H. A. M.; and Van Hove, Eddy F. C., 4,361,779, Cl. 313-221.000.
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United Technologies Corporation: *See*—
Betterini, William E., 4,361,839, Cl. 340-870.130.
Tanrikut, Ibrahim S.; Wagner, Walter B.; Segalman, Irwin; and Goldberg, Perry, 4,361,010, Cl. 60-757.000.
University of California, The Regents of the: *See*—
Hull, Maury L.; and Ramming, John E., 4,361,344, Cl. 280-613.000.
Loh, Horace H.; and Lee, Nancy M., 4,361,553, Cl. 424-177.000.
University of Kentucky Research Foundation, The: *See*—
Swetnam, Larry D.; Casada, James H.; and Walton, Linus R., 4,361,002, Cl. 56-27.500.
University Of Queensland, The: *See*—
Nicol, Robert W.; Gottschall, Martin; and Lyman, Geoffrey, 4,361,052, Cl. 73-863.000.
University Patents, Inc.: *See*—
Angus, John C.; Tomaswick, Kathleen M.; and Landau, Uziel, 4,361,641, Cl. 430-313.000.
UOP Inc.: *See*—
Antos, George J., 4,361,479, Cl. 208-139.000.
Castillo, Carmen; and Hayes, John C., 4,361,496, Cl. 252-416.000.
Upjohn Company, The: *See*—
White, David R., 4,361,701, Cl. 549-361.000.
Upjohn Manufacturing Company, The: *See*—
Peck, Susanne M.; Larion, Lois J.; and Rowe, Englebert L., 4,361,580, Cl. 424-287.000.
Ura, Hiroaki: *See*—
Iwai, Fumio; Koiso, Junichi; Hirabayashi, Tsugio; and Ura, Hiroaki, 4,360,944, Cl. 15-256.510.
Urban, Gerd; Opitz, Heinrich; and Mages, Gert, to Siemens Aktiengesellschaft. Method for recording flow boundary layers in liquid media. 4,361,644, Cl. 430-422.000.
Uriyu, Katuhiro: *See*—
Uemura, Yahiro; Uriyu, Katuhiro; and Funakoshi, Satoshi, 4,361,652, Cl. 435-188.000.
Usardi, Maria M.: *See*—
Gandolfi, Carmelo; Pellegata, Renato; Ceserani, Roberto; and Usardi, Maria M., 4,361,577, Cl. 424-285.000.

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Murphy, Brian J. M.; Withers, Leslie A.; and Salway-Waller, Malcolm, 4,360,938, Cl. 12-12.500.

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Suzuki, Yoshitsugu; Iizuka, Syogo; Kajiyama, Shigeo; Usui, Kenji; and Kobayashi, Masahiro, 4,360,962, Cl. 29-564.400.

Vac-Tec Systems, Inc.: *See—*
Morrison, Charles F., Jr., 4,361,472, Cl. 204-192.00R.

Vajda, Ferenc: *See—*
Nemes, Sandor; Solymos, Karoly; Barna, Laszlo; Bognar, Tibor; Szigetvari, Jozsef; Vajda, Ferenc; and Tornai, Endre, 4,361,414, Cl. 415-83.000.

van der Lely, Cornelis. Tank for transporting liquid material. 4,361,039, Cl. 73-313.000.

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van der Steen, Gerardus H. A. M.; and Van Hove, Eddy F. C., to U.S. Philips Corporation. Lamp having a lamp vessel made of quartz glass, quartz glass and method of preparing quartz glass. 4,361,779, Cl. 313-221.000.

Van Dort, Klaas P., to Mars, Incorporated. Coin testing apparatus. 4,361,218, Cl. 194-102.000.

Van Dyke, John W., Jr.; and Kurchacova, Elva, to Miles Laboratories, Inc. Tetrahydro β-carbolines having antihypertensive activity. 4,361,566, Cl. 424-256.000.

Van Hove, Eddy F. C.: *See—*
van der Steen, Gerardus H. A. M.; and Van Hove, Eddy F. C., 4,361,779, Cl. 313-221.000.

Van Scott, Eugene J.; and Yu, Ruey J. 3-Carbamoyl-6-aminopyridinium and analogues, and their use in treating skin disorders. 4,361,571, Cl. 424-266.000.

Varadhachary, Seevaram N.: *See—*
Boba, Joseph; Varadhachary, Seevaram N.; and Pogozelski, Vincent F., 4,361,626, Cl. 428-420.000.

Varitan, Inc.: *See—*
Mills, Ned D., 4,361,077, Cl. 91-500.000.

Varma, Ravi K., to E. R. Squibb & Sons, Inc. Antiinflammatory 17,17-bis (substituted thio) androstenes. 4,361,559, Cl. 424-243.000.

Varta Batterie Aktiengesellschaft: *See—*
Golz, Hans-Joachim; and Illmann, Joachim, 4,361,316, Cl. 269-43.000.

VDO Adolf Schindling AG: *See—*
Hauschild, Wolfgang; and Baumgart, Hans J., 4,361,037, Cl. 73-295.000.

Veda, Inc.: *See—*
Buschbom, Floyd E., 4,361,203, Cl. 180-213.000.

Veilex, Robert: *See—*
Dagnelie, Jean-Paul; Veilex, Robert; and Rahuel, Jean-Claude, 4,361,725, Cl. 178-19.000.

Vereinigte Aluminium-Werke Aktiengesellschaft: *See—*
Bings, Hubert; Kampf, Fritz; Thome, Roland; Wargalla, Gerhard; Winkhaus, Gunter; Pietsch, Hartmut; Turke, Wolfgang; and Fischer, Peter, 4,361,541, Cl. 423-20.000.

Victor Company of Japan, Limited: *See—*
Kitamura, Masatsugu; Onoye, Hideo; Ono, Tsuyoshi; Ohno, Fumiaki; Kishima, Yukihiro; and Morita, Yutaka, 4,361,880, Cl. 369-33.000.
Negishi, Kazuo; and Fujita, Mitsuo, 4,361,787, Cl. 318-6.000.

Victoreen, Inc.: *See—*
Siedband, Melvin P., 4,361,900, Cl. 378-98.000.

Vinciguerra, Costantino, to Nuovo Pignone S.p.A. Annular gasket for static sealing for very high temperatures and small pressure drops, and method of making. 4,361,335, Cl. 277-204.000.

Vinson, Joe D., to Sub-Surface Tools, Inc. Method and apparatus for retrieving wear bushings of various diameters. 4,361,353, Cl. 294-86.100.

Virtanen, Risto, to Perlos Oy. Closing means for a container, tube or the like. 4,361,243, Cl. 215-206.000.

Voest-Alpine Aktiengesellschaft: *See—*
Kubin, Johann; Peer, Hermann; and Sodeck, Gottfried, 4,360,989, Cl. 47-65.000.

Vogel, Roger F.: *See—*
Marcelin, George; Vogel, Roger F.; and Swift, Harold E., 4,361,705, Cl. 568-462.000.

Vohringer, Karl, to Volksbank-Raiffeisenbank Buhl e.G. Gerotor liquid pump mounted on a support bushing. 4,361,419, Cl. 418-73.000.

Voith Getriebe KG: *See—*
Lindenthal, Hans, 4,361,211, Cl. 188-296.000.

Volgyesi, George A., to Hospital for Sick Children, The. Apparatus for calculating cardiac output. 4,361,049, Cl. 73-861.050.

Volksbank-Raiffeisenbank Buhl e.G.: *See—*
Vohringer, Karl, 4,361,419, Cl. 418-73.000.

Vorwerk & Co. Interholding GmbH: *See—*
Krumm, Heinz-Gerhard; Wulf, Peter; and Guhne, Wieland, 4,360,939, Cl. 15-49.00C.

Voss, Joseph A. Extruded plastic hygienic applicator. 4,361,150, Cl. 128-263.000.

Voves, James E.: *See—*
Wise, Louis; and Voves, James E., 4,361,355, Cl. 296-37.100.

Vulcan Industrial Packaging Limited: *See—*
Szego, Andrew, 4,361,190, Cl. 169-48.000.

W. H. Brady Co.: *See—*
Downing, Gerald T.; Stepanski, Eugene R.; and Wirth, Gary J., 4,361,230, Cl. 206-345.000.

Wabco Fahrzeugbremsen GmbH: *See—*
Fauck, Gerhard, 4,361,362, Cl. 303-22.00A.

WABCO Ltd.: *See—*
Cape, John; and Smith, Eric, 4,361,078, Cl. 92-31.000.

Wachholz, Winfried: *See—*
Friedrich, Klaus; Nicolai, Rainer; Schweiger, Fritz; and Wachholz, Winfried, 4,361,535, Cl. 376-215.000.

Wacker-Chemie GmbH: *See—*
More, Anton, 4,361,449, Cl. 148-26.000.

Wada, Osamu: *See—*
Suzuki, Togi; Tsunawaki, Kiyokazu; Wada, Osamu; and Kimura, Akio, 4,361,617, Cl. 428-224.000.

Wafilin B.V.: *See—*
Boonstra, Sije, 4,361,485, Cl. 210-636.000.

Wagener, Dietrich: *See—*
Meckel, Joachim; Joseph, Horst; and Wagener, Dietrich, 4,360,976, Cl. 34-20.000.

Wagner, Walter B.: *See—*
Tanrikut, Ibrahim S.; Wagner, Walter B.; Segalman, Irwin; and Goldberg, Perry, 4,361,010, Cl. 60-757.000.

Waid, Roger K.: *See—*
Carlson, Donald J.; Neumeyer, Martin J.; O'Rourke, Glenn; and Waid, Roger K., 4,361,071, Cl. 89-1.815.

Wainberg, Ronald P.: *See—*
Dicoi, Ovidiu; and Wainberg, Ronald P., 4,361,538, Cl. 422-62.000.

Wakabayashi, Noboru: *See—*
Torikai, Eiichi; Kawami, Youji; and Wakabayashi, Noboru, 4,361,602, Cl. 427-123.000.

Wakamatsu, Fumio, to Aisin Seiki Kabushiki Kaisha. Bumper for vehicles. 4,361,352, Cl. 293-120.000.

Wakayama, Junji: *See—*
Kamiya, Sigeru; Wakayama, Junji; Hayashi, Nobutoshi; Noguchi, Hiroshi; Uchida, Kenichi; and Mori, Nobuhisa, 4,361,028, Cl. 73-28.000.

Waldron, James S.: *See—*
Purcell, William P.; Gilliom, Richard D.; and Parish, Harlie A., Jr., 4,361,700, Cl. 544-279.000.

Walker, Francis H.: *See—*
Fancher, Llewellyn W.; and Walker, Francis H., 4,361,439, Cl. 71-106.000.

Wall, Fraser: *See—*
Gengler, Hans; Schwab, Wolfgang; Wall, Fraser; and Bailey, Thomas, 4,361,478, Cl. 208-130.000.

Walmsley, Stanley: *See—*
Aldridge, William R.; and Walmsley, Stanley, 4,361,219, Cl. 198-315.000.

Walter, John, to Continental Group, Inc., The. Pilferproof closure. 4,361,244, Cl. 215-253.000.

Walton, Linus R.: *See—*
Swetnam, Larry D.; Casada, James H.; and Walton, Linus R., 4,361,002, Cl. 56-27.500.

Wamstad, David B.: *See—*
McMullen, Raymond F.; and Wamstad, David B., 4,361,047, Cl. 73-721.000.

Ware, Jay T.; Counterman, Wayne S.; and Brown, Milton C., to Combustion Engineering, Inc. Recuperator design. 4,361,183, Cl. 165-82.000.

Warga, Johann: *See—*
Clemens, Alexander; Schueler, Peter; Reiff, Karl; and Warga, Johann, 4,361,121, Cl. 123-198.0DB.

Wargalla, Gerhard: *See—*
Bings, Hubert; Kampf, Fritz; Thome, Roland; Wargalla, Gerhard; Winkhaus, Gunter; Pietsch, Hartmut; Turke, Wolfgang; and Fischer, Peter, 4,361,541, Cl. 423-20.000.

Warner Amex Cable Communications Inc.: *See—*
Barber, Tommie L.; Korodi, Miklos B.; Davis, Steven J.; Schuldt, David A.; Christenson, Paul E.; Towse, Andrew C.; Jones, Donald S.; and Roh, David J., 4,361,730, Cl. 179-5.00R.

Washio, Takaji; and Kai, Masami, to Mita Industrial Company Limited. Exposure adjustment device for electrostatic copying apparatus. 4,361,395, Cl. 355-14.00R.

Watanabe, Katsumi. Sound reproducing device incorporating a device for selecting a desired record groove. 4,361,882, Cl. 369-30.000.

Watanabe, Katsutoshi: *See—*
Isobe, Susumu; Nakajima, Hajime; Kondo, Tatsuo; Watanabe, Katsutoshi; Ishida, Yasukazu; Okada, Takeshi; and Kobayashi, Taiki, 4,361,443, Cl. 75-128.00W.

Watanabe, Ryozo; and Ohgaki, Mitsuomi, to Green Cross Corporation, The. Plasminogen preparations. 4,361,653, Cl. 435-188.000.

Watatani, Yoshizumi, to Hitachi, Ltd. FM Audio demodulator with dropout noise elimination circuit. 4,361,813, Cl. 329-132.000.

Watkins, Laurence S.: *See—*
Banks, Edward L.; Truax, Bruce E.; and Watkins, Laurence S., 4,361,643, Cl. 430-396.000.

Wauters, Ronald P.; Kenyon, Ralph E.; Sarma, Monoj K.; Layton, Larry L.; Swanson, Wade H.; and Hibler, Diane E., to General Foods Corporation. Infused dried celery. 4,361,589, Cl. 426-270.000.

Webb, David M.: *See—*
Lane, Thomas A.; and Webb, David M., 4,361,878, Cl. 364-900.000.

Weber, Robert E.; and Borovsky, Joseph, to Kimberly-Clark Corporation. Alkaline battery, composite separator therefor. 4,361,632, Cl. 429-145.000.

Webster, Harold F.: *See—*
Gilmore, Robert S.; Glascock, Homer H., II; and Webster, Harold F., 4,361,717, Cl. 136-246.000.

Webster, Timothy J.: *See—*
Hou, Kenneth C.; and Webster, Timothy J., 4,361,486, Cl. 210-722.000.
Wechs, Friedbert: *See—*
Gerlach, Klaus; Mathes, Nikolaus; and Wechs, Friedbert, 4,361,609, Cl. 428-90.000.
Wedek, Rolf; and Meiritz, Lothar, to Alfelder Maschinen-Und Modell-Fabrik Kunkel, Wagner & Co. K.G. Method and apparatus for preparing, more particularly for the cooling and mixing of moulding sand. 4,361,405, Cl. 366-7.000.
Weeger, Hans-Peter; and Herdtle, Heinrich, to Zinser Textilmaschinen GmbH. Assembly for winding up textile filaments. 4,361,005, Cl. 57-117.000.
Weimer, Charles M.: *See—*
Schubert, Keith E.; Albright, David B.; Weimer, Charles M.; and Pollak, Philip, Jr., 4,361,753, Cl. 235-101.000.
Weimer, Dean R.: *See—*
Dodd, John R.; and Weimer, Dean R., 4,361,683, Cl. 526-84.000.
Weinberg, Kurt; and Johnson, Gordon C., to Union Carbide Corporation. Coordination complexes as polyesterification catalysts. 4,361,694, Cl. 528-279.000.
Weinberg, Melvin S.; and Cormier, Alan D., to Instrumentation Laboratory Inc. Analysis system. 4,361,539, Cl. 422-68.000.
Weinberg, Melvin S.; and Cormier, Alan D., to Instrumentation Laboratory Inc. Analysis system. 4,361,540, Cl. 422-68.000.
Weitz, Hans-Martin; Schnabel, Rolf; and Platz, Rolf, to BASF Aktiengesellschaft. Preparation of butane-1,4-diol. 4,361,710, Cl. 568-864.000.
Welch, Richard H., Jr.: *See—*
Mercier, Gary M.; and Welch, Richard H., Jr., 4,361,744, Cl. 219-10.55F.
Wells, David L. Body stretching exerciser. 4,361,322, Cl. 272-126.000.
Wenzel, Franz: *See—*
Arndt, Peter J.; Ross, Klaus; and Wenzel, Franz, 4,361,687, Cl. 524-850.000.
Wenzel, Joachim. Solar power station. 4,361,295, Cl. 244-33.000.
Werner & Pfleiderer: *See—*
Hinger, Klaus-Jurgen, 4,361,100, Cl. 110-238.000.
West, Evelyn M. Movable room dividing partition. 4,360,991, Cl. 52-29.000.
West, John B., to Maryland Cup Corporation. Soup dispenser. 4,361,176, Cl. 141-362.000.
Western Electric Co., Inc.: *See—*
Banks, Edward L.; Truax, Bruce E.; and Watkins, Laurence S., 4,361,643, Cl. 430-396.000.
D'Amico, John F.; DeAngelo, Michael A., Jr.; and Saminathan, Manjini, 4,360,968, Cl. 29-840.000.
Gilly, Randall K.; and Rehrig, David L., 4,360,964, Cl. 29-574.000.
Herman, Carl H.; Johnson, Anderson F., Jr.; Large, Donald M.; and Tamashasky, Joseph A., 4,360,995, Cl. 53-437.000.
Jackson, Kenneth W., 4,361,661, Cl. 523-442.000.
Lord, Herbert A., 4,361,749, Cl. 219-121.0PD.
Martyniak, Gerald J., 4,361,862, Cl. 361-404.000.
Westinghouse Electric Corp.: *See—*
Hunstad, Richard L.; and Kasner, William H., 4,361,888, Cl. 372-55.000.
Jackson, Leigh F.; and Kappenhagen, George A., 4,361,208, Cl. 187-1.00R.
Kappenhagen, George A.; and Jackson, Leigh F., 4,361,209, Cl. 187-17.000.
Kraft, Joseph K., 4,361,220, Cl. 198-330.000.
Rush, Donald L., 4,361,300, Cl. 246-5.000.
Rush, Donald L., 4,361,301, Cl. 246-34.00R.
Yoldas, Bulent E., 4,361,598, Cl. 427-74.000.
Zwillich, Alexander, 4,361,369, Cl. 312-223.000.
Westkamper, Michael J.: *See—*
Davis, Ray E., Jr.; Becker, Richard J.; Foster, Robert G.; Westkamper, Michael J.; Timothy, Earle J.; and Johnson, Richard H., 4,361,792, Cl. 318-729.000.
Wettergren, Hans: *See—*
Ekstrom, Staffan; and Wettergren, Hans, 4,361,145, Cl. 128-204.260.
Wetterhorn, Richard H.; and Kosh, William S., to Dresser Industries, Inc. Calibration adjustment for gauge instruments. 4,361,046, Cl. 73-711.000.
Wharton Shipping Corporation: *See—*
Kirby, William E.; and Seymour, David J. (said D. J. Seymour, a part interest assors. to), 4,361,105, Cl. 114-260.000.
Whirlpool Corporation: *See—*
Czech, James I., 4,361,774, Cl. 310-90.000.
Frohbieter, Edwin H., 4,360,977, Cl. 34-86.000.
Mokrzycki, Eugene H., 4,361,773, Cl. 310-71.000.
White, David R., to Upjohn Company, The. Novel compounds, compositions and processes. 4,361,701, Cl. 549-361.000.
White, Harold R.; and Doncer, Alexander J., Jr., to Alar Engineering Corporation. Liquid separating and recycling. 4,361,488, Cl. 210-776.000.
White, Preston S.: *See—*
Hillman, Patrick E.; and White, Preston S., 4,361,601, Cl. 427-123.000.
White, Richard M.: *See—*
Muller, Richard S.; and White, Richard M., 4,361,026, Cl. 73-23.000.
Whitfield, Richard G.: *See—*
Cooke, Theodore M.; Whitfield, Richard G.; and Lin, An-Chung R., 4,361,843, Cl. 346-1.100.
Whittam, Thomas V.: *See—*
Short, Glyn D.; Spencer, Michael S.; and Whittam, Thomas V., 4,361,715, Cl. 585-640.000.
Wickersham, Ronald J.: *See—*
Long, Edward M.; and Wickersham, Ronald J., 4,361,736, Cl. 179-121.00R.
Wico Corporation: *See—*
Geller, David A., 4,361,827, Cl. 340-65.000.
Wiechert, Rudolf: *See—*
Alig, Leo; Furst, Andor; Keller, Peter; Muller, Marcel; Kerb, Ulrich; and Wiechert, Rudolf, 4,361,578, Cl. 424-285.000.
Wieland, Peter, to Ciba-Geigy Corporation. Halogenated steroids. 4,361,558, Cl. 424-243.000.
Wilcox, Brian N.; and Robinson, John W., to Kimball International Inc. Integrated central processor for electronic organ. 4,361,065, Cl. 84-1.030.
Wilcoxson, Anthony L.: *See—*
Gagliani, John; Lee, Raymond; and Wilcoxson, Anthony L., 4,361,453, Cl. 156-79.000.
Wild, Ferdinand: *See—*
Boldt, Manfred; Gubitosa, Giuseppe; Brintzinger, Hans H.; and Wild, Ferdinand, 4,361,497, Cl. 252-426.000.
Willat, Bret G. Water sled device. 4,361,103, Cl. 114-246.000.
Willems, Josef: *See—*
Bartusel, Karl R.; Roth, Mario; Schamberg, Walter; and Willems, Josef, 4,361,428, Cl. 65-29.000.
Williams, Arthur J., to Commercial Shearing, Inc. Pressure compensated control valves. 4,361,169, Cl. 137-596.130.
Williams, Charles N., to AMF Incorporated. Packaging of solid state relay. 4,361,371, Cl. 339-17.00R.
Williams, Clarence E. Self closing tank lid. 4,361,247, Cl. 220-88.00R.
Williams, Robert J., to Northern Telecom Limited. Optical cable. 4,361,381, Cl. 350-96.230.
Willis, John P.: *See—*
Young, Chung C.; and Willis, John P., 4,361,473, Cl. 204-195.00M.
Wilson, Daniel W. Portable pneumatic railroad switch cleaning device. 4,360,949, Cl. 15-405.000.
Wilson, Gary L.: *See—*
Wood, Forrest L.; Jensen, Dale H.; Poley, Kenneth P.; Hoover, Charles C.; and Wilson, Gary L., 4,361,102, Cl. 114-56.000.
Wine, Charles M., to RCA Corporation. Direct access channel selection apparatus for a digital tuning system. 4,361,907, Cl. 455-160.000.
Wing Industries, Inc.: *See—*
Newton, Emerson H., 4,361,620, Cl. 428-341.000.
Winkhaus, Gunter: *See—*
Bings, Hubert; Kampf, Fritz; Thome, Roland; Wargalla, Gerhard; Winkhaus, Gunter; Pietsch, Hartmut; Turke, Wolfgang; and Fischer, Peter, 4,361,541, Cl. 423-20.000.
Winterbottom, Kenneth, to Ciba-Geigy Corporation. Process for advancing etherified aminoplast resins with a guanamine. 4,361,594, Cl. 427-27.000.
Winters, Douglas E.: *See—*
Stein, Age; and Winters, Douglas E., 4,361,328, Cl. 273-156.000.
Wirth, Gary J.: *See—*
Downing, Gerald T.; Stepanski, Eugene R.; and Wirth, Gary J., 4,361,230, Cl. 206-345.000.
Wirtschafter, Jonathan, to Mediminder Development Ltd. Timer and alarm apparatus. 4,361,408, Cl. 368-10.000.
Wischnack, Wolfram; and Dobner, Alfred, to Alcan Aluminiumwerk Nurnberg GmbH. Casting core and process for the production thereof. 4,361,181, Cl. 164-522.000.
Wise, Louis; and Voves, James E., to Morris, Jeffrey M. Parking ticket collection apparatus. 4,361,355, Cl. 296-37.100.
Witchey, Albert L., to RCA Corporation. Knife edge bearing system. 4,361,365, Cl. 308-2.00R.
Withers, Leslie A.: *See—*
Murphy, Brian J. M.; Withers, Leslie A.; and Salway-Waller, Malcolm, 4,360,938, Cl. 12-12.500.
Witt, Ronald A., to Falk Corporation, The. Divided thrust apparatus. 4,361,058, Cl. 74-665.0GD.
Wittkopf, Eugene W.; and Leanna, Dale D., to Magna-Graphics Corporation. Multi-color rotary press. 4,361,089, Cl. 101-182.000.
WOCO Franz-Josef Wolf & Co.: *See—*
Wolf, Franz J.; and Lauer, Hansjorg, 4,361,349, Cl. 285-110.000.
Woicke, Bernd, to Auergesellschaft GmbH. Filtering respirator. 4,361,146, Cl. 128-206.120.
Wojcik, Herbert W., to Darling-Delaware Co., Inc. Process for separating and recovering fat and proteinaceous material from raw organic material. 4,361,590, Cl. 426-480.000.
Wolf, Franz J.; and Lauer, Hansjorg, to WOCO Franz-Josef Wolf & Co. Ring-packed pipe spigot-and-socket connection. 4,361,349, Cl. 285-110.000.
Wolfe, Paul G., to North American Philips Consumer Electronics Corp. Video switch for a VTR-compatible television receiver. 4,361,854, Cl. 358-181.000.
Wong, George H.; Embry, Lamar; Ely, Donald A.; Pantaleo, Peter F.; Cooke, Ronald D.; Chance, James L.; and Beachler, Edward D., to Beloit Corporation. Air impingement web drying method and apparatus. 4,361,466, Cl. 162-207.000.
Wood, Forrest L.; Jensen, Dale H.; Poley, Kenneth P.; Hoover, Charles C.; and Wilson, Gary L., to Wood Manufacturing Co., Inc. Vee type planing hull for power boats. 4,361,102, Cl. 114-56.000.
Wood Manufacturing Co., Inc.: *See—*
Stone, Wayne B., Jr., 4,361,257, Cl. 222-464.000.
Wood, Forrest L.; Jensen, Dale H.; Poley, Kenneth P.; Hoover, Charles C.; and Wilson, Gary L., 4,361,102, Cl. 114-56.000.

Wood, Samuel F., to Northern Telecom Limited. Trunk interface circuit with current compensation. 4,361,732, Cl. 179-18.0AH.
Wood, Stuart K.: *See*—
Hall, Leslie G.; Larson, David V.; Smith, Michael A.; and Wood, Stuart K., 4,361,296, Cl. 244-54.000.
Worder, Hans, to Bunder Glas GmbH. Injection syringe. 4,361,149, Cl. 128-215.000.
Wourms, Robert L., to National Semiconductor Corporation. Method of forming plasma etched semiconductor contacts. 4,361,599, Cl. 427-90.000.
Wozniacki, Roger M., to Wozniacki, Roger M. Four-corner design for octagonal container. 4,361,267, Cl. 229-39.00R.
Wulf, Peter: *See*—
Krumm, Heinz-Gerhard; Wulf, Peter; and Guhne, Wieland, 4,360,939, Cl. 15-49.00C.
Wurlitzer Company, The: *See*—
Grajek, Stanley A.; Hill, Robert S.; and Klaiber, George S., 4,361,458, Cl. 156-264.000.
Hoskinson, William R.; and Miguel, Edward K., 4,361,754, Cl. 235-381.000.
Wurtz, Frank R. Perspective drawing machine. 4,360,975, Cl. 33-432.000.
Xerox Corporation: *See*—
Noto, Fedele A., 4,361,393, Cl. 355-3.0SH.
Yajima, Seishi; Okamura, Kiyohito; and Shishido, Toetsu, to NTN Toyo Bearing Co., Ltd.; and Yajima, Seishi. Process for producing heat-resistant and moisture-resistant polyborometallosiloxanes. 4,361,679, Cl. 525-389.000.
Yajima, Seishi; Okamura, Kiyohito; and Shishido, Toetsu, to NTN Toyo Bearing Co., Ltd.; and Yajima, Seishi. Process for production of heat-resistant compounds. 4,361,691, Cl. 528-28.000.
Yamada, Kenji: *See*—
Nakajima, Fumio; Machida, Takayasu; and Yamada, Kenji, 4,361,410, Cl. 368-157.000.
Yamada, Seiji, to Minolta Camera Kabushiki Kaisha. Focus condition indicating system for use in a camera. 4,361,390, Cl. 354-198.000.
Yamada, Shoji: *See*—
Kanada, Eiji; Kondo, Toshiro; and Yamada, Shoji, 4,361,639, Cl. 430-204.000.
Yamaguchi, Hideki: *See*—
Teraoku, Hiroshi; and Yamaguchi, Hideki, 4,361,254, Cl. 222-196.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Kobayashi, Takashi, 4,361,339, Cl. 280-21.00R.
Yamashita, Sadahiko: *See*—
Sagawa, Morikazu; Makimoto, Mitsuo; and Yamashita, Sadahiko, 4,361,820, Cl. 333-206.000.
Yamashita, Shigeo: *See*—
Nakamura, Michiharu; Hirao, Motohisa; Yamashita, Shigeo; Fukuzawa, Tadashi; and Umeda, Junichi, 4,361,887, Cl. 372-50.000.
Yamashita, Yasuhiro: *See*—
Takaku, Sakae; Matsuura, Fumiaki; Mori, Takashi; Murakami, Yasushi; Kataoka, Shigeyuki; Takeda, Yasuhisa; Yamashita, Yasuhiro; Takeda, Yumiko; Matsuno, Takashi; Mizuno, Koji; Kaiho, Shinichi; Yamazaki, Tamotsu; Hata, Shun-ichi; and Takanashi, Shigeru, 4,361,572, Cl. 424-266.000.
Yamazaki, Fumio: *See*—
Sakai, Yukio; Yamazaki, Fumio; and Satoh, Isao, 4,361,394, Cl. 355-3.00R.
Yamazaki, Tamotsu: *See*—
Takaku, Sakae; Matsuura, Fumiaki; Mori, Takashi; Murakami, Yasushi; Kataoka, Shigeyuki; Takeda, Yasuhisa; Yamashita, Yasuhiro; Takeda, Yumiko; Matsuno, Takashi; Mizuno, Koji; Kaiho, Shinichi; Yamazaki, Tamotsu; Hata, Shun-ichi; and Takanashi, Shigeru, 4,361,572, Cl. 424-266.000.
Yano, Yasuhiro: *See*—
Haruta, Masahiro; Matsufuji, Yohji; Yano, Yasuhiro; Ohta, Tokuya; and Eida, Tsuyoshi, 4,361,842, Cl. 346-1.100.
Yasuda, Naohiko; Eguchi, Chikahiko; Okutsu, Masaru; and Hirose, Yoshiteru, to Ajinomoto Company Incorporated. Imidazoledicarboxylic acid derivative. 4,361,560, Cl. 424-246.000.
Yasuda, Takeshi, to Casio Computer Co., Ltd. Schedule table printing apparatus. 4,361,874, Cl. 364-710.000.
Yazaki Corporation: *See*—
Suzuki, Yoshitsugu; Iizuka, Syogo; Kajiyama, Shigeo; Usui, Kenji; and Kobayashi, Masahiro, 4,360,962, Cl. 29-564.400.
Yevich, Joseph P.: *See*—
Temple, Davis L., Jr.; Yevich, Joseph P.; and Lobeck, Walter G., Jr., 4,361,565, Cl. 424-250.000.
Yoldas, Bulent E., to Westinghouse Electric Corp. Polymerized solutions for depositing optical oxide coatings. 4,361,598, Cl. 427-74.000.
Yoshida, Shinji: *See*—
Furukawa, Yasuyoshi; and Yoshida, Shinji, 4,361,608, Cl. 428-36.000.
Yoshida, Toshiya. Urination disposal bag. 4,360,932, Cl. 4-144.200.
Yoshikawa, Ryoichi: *See*—
Haraguchi, Shosuke; and Yoshikawa, Ryoichi, 4,361,391, Cl. 354-288.000.
Yoshino Kogyosho Co., Ltd.: *See*—
Saito, Tadao; Kishi, Takao; and Kakuta, Yoshiyuki, 4,361,255, Cl. 222-321.000.
Yoshitomi Pharmaceutical Industries, Ltd.: *See*—
Munakata, Tomohiko; Tashiro, Chiaki; and Maruyama, Yutaka, 4,361,579, Cl. 424-287.000.
Young, Chung C.; and Willis, John P., to Nova Biomedical Corporation. Potassium ion-selective membrane electrode. 4,361,473, Cl. 204-195.00M.
Young, Harold W., Jr.: *See*—
Solomon, Jeffry A.; and Young, Harold W., Jr., 4,361,504, Cl. 252-463.000.
Young, Ian R.: *See*—
Burl, Michael; and Young, Ian R., 4,361,807, Cl. 324-309.000.
Younger, Gib, to A. Lakin & Sons, Inc. Exhaust system hanger. 4,361,304, Cl. 248-544.000.
Yu, Ruey J.: *See*—
Van Scott, Eugene J.; and Yu, Ruey J., 4,361,571, Cl. 424-266.000.
Yusa, Hideo: *See*—
Kikuchi, Makoto; Chino, Koichi; Kawamura, Fumio; and Yusa, Hideo, 4,361,505, Cl. 252-628.000.
Zaar, Wolfgang; Schroeder, Manfred; and Maahs, Gunther, to Chemische Werke Huels, Aktiengesellschaft. Preparation of copolymers of ethylene with at least one other 1-monoolefin and an optional unconjugated diene. 4,361,686, Cl. 526-143.000.
Zafferri, Roberto: *See*—
Laesser, Claude; Zafferri, Roberto; and Depery, Jean, 4,361,790, Cl. 318-696.000.
Zahnradfabrik Friedrichshafen, AG.: *See*—
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Bieber, Gerold; Boss, Franz; and Magg, Alfred, 4,361,217, Cl. 192-103.0FA.
Zander, Charles R.: *See*—
McClanahan, Buford A.; Udolf, Herb W.; Zander, Charles R.; and Thresher, Robert W., 4,361,444, Cl. 134-3.000.
Zarnoch, Kenneth P.: *See*—
Iacovangelo, Charles D.; and Zarnoch, Kenneth P., 4,361,631, Cl. 429-40.000.
Zdahl, Norbert: *See*—
Streitberger, Hans-Joachim; Lessmeister, Peter; and Zdahl, Norbert, 4,361,660, Cl. 523-404.000.
Zeag Systems AG: *See*—
Ehrat, Kurt, 4,361,757, Cl. 235-487.000.
Zettergren, Ted. Safety device at remote control of hydraulic or pneumatic machine tools. 4,361,836, Cl. 340-825.200.
Zhdanovich, Gennady M.; Dudyak, Alexandr I.; Galkov, Mikhail I.; Baraban, Vladimir P.; Zherebtsov, Jury V.; Zholob, Anatoly P.; Zhuk, Mikhail M.; and by Zhuk, Galina K., administrator. Process for producing polycrystals of cubic boron nitride. 4,361,543, Cl. 423-290.000.
Zherebtsov, Jury V.: *See*—
Zhdanovich, Gennady M.; Dudyak, Alexandr I.; Galkov, Mikhail I.; Baraban, Vladimir P.; Zherebtsov, Jury V.; Zholob, Anatoly P.; Zhuk, Mikhail M.; and Zhuk, Galina K., administrator, 4,361,543, Cl. 423-290.000.
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Zhdanovich, Gennady M.; Dudyak, Alexandr I.; Galkov, Mikhail I.; Baraban, Vladimir P.; Zherebtsov, Jury V.; Zholob, Anatoly P.; Zhuk, Mikhail M.; and Zhuk, Galina K., administrator, 4,361,543, Cl. 423-290.000.
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Zhuk, Mikhail M.: *See*—
Zhdanovich, Gennady M.; Dudyak, Alexandr I.; Galkov, Mikhail I.; Baraban, Vladimir P.; Zherebtsov, Jury V.; Zholob, Anatoly P.; Zhuk, Mikhail M.; and Zhuk, Galina K., administrator, 4,361,543, Cl. 423-290.000.
Zieler, Erich, to U.S. Philips Corporation. Device for determining local absorption differences in an object. 4,361,764, Cl. 378-14.000.
Zimmer USA, Inc.: *See*—
Tanner, Gary D., 4,361,141, Cl. 128-69.000.
Zimmerman, Theodore S.; and Fulcher, Carol A., to Scripps Clinic and Research Foundation. Ultrapurification of factor VIII using monoclonal antibodies. 4,361,509, Cl. 260-112.00B.
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Zwillich, Alexander, to Westinghouse Electric Corp. Switchgear with enclosure. 4,361,369, Cl. 312-223.000.
2500 Corporation, The: *See*—
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Broughton, James A., to Brown & Williamson Tobacco Corporation. Lightly prized tobacco. Re. 31,091, Cl. 131-111.000.

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Kanazawa, Takato, deceased: *See*—
Kobayashi, Tetsu; Kanazawa, Takato, deceased; and Tsuboi, Makoto, Re. 31,094, Cl. 219-10.55B.

Kobayashi, Tetsu; Kanazawa, Takato, deceased (by Kanayawa, Kyoko, administrator); and Tsuboi, Makoto, to Matsushita Electrical Industrial Co., Ltd. Apparatus for controlling heating time utilizing humidity sensing. Re. 31,094, Cl. 219-10.55B.

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Kobayashi, Tetsu; Kanazawa, Takato, deceased; and Tsuboi, Makoto, Re. 31,094, Cl. 219-10.55B.

Miller, Charles E.: *See*—
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Nakada, Akira: *See*—
Yamaga, Eiichi; Nakada, Akira; Okumura, Takatoshi; Aoki, Eiichiro; Oya, Akiyoshi; and Uchiyama, Yasuji, Re. 31,090, Cl. 84-1.010.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Yamaga, Eiichi; Nakada, Akira; Okumura, Takatoshi; Aoki, Eiichiro; Oya, Akiyoshi; and Uchiyama, Yasuji, Re. 31,090, Cl. 84-1.010.

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Yamaga, Eiichi; Nakada, Akira; Okumura, Takatoshi; Aoki, Eiichiro; Oya, Akiyoshi; and Uchiyama, Yasuji, Re. 31,090, Cl. 84-1.010.

Oya, Akiyoshi: *See*—
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Sieber, Walter P., to Inverchair Inc. Orthopedic reclining chair. Re. 31,092, Cl. 297-326.000.

Stallings, Robert L.: *See*—
Tolles, Edward D.; Stallings, Robert L.; and Miller, Charles E., Re. 31,093, Cl. 252-423.000.

Tolles, Edward D.; Stallings, Robert L.; and Miller, Charles E., to Westvaco Corporation. Process for making activated carbon with control of metal ion concentration in phosphoric acid. Re. 31,093, Cl. 252-423.000.

Tsuboi, Makoto: *See*—
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American Standard Inc.: *See*—
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Ampex Corporation: *See*—
Wilson, George A., 267,063, Cl. D6-156.000.

Arnolds, Gerd. Combined lavatory spout and water control handles. 267,110, 11-30-82, Cl. D23-25.000.

Arnolds, Gerd. Combined lavatory spout and water control handles. 267,111, 11-30-82, Cl. D23-25.000.

Asbury, Kemper D. Combination lamp and open top storage table. 267,120, 11-30-82, Cl. D26-58.000.

Bittinger, Daryl E. Self propelled shop cart. 267,084, 11-30-82, Cl. D12-85.000.

Blake, Alfred, to American Commercial Incorporated. Dinner plate. 267,070, 11-30-82, Cl. D7-30.000.

Bonifield, Charles B. Combined boat deck and ski storage well. 267,083, 11-30-82, Cl. D12-318.000.

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Carlson, Arthur R., 267,071, Cl. D7-79.000.

Brunner, Josef: *See*—
Rock, Erich; and Brunner, Josef, 267,066, Cl. D6-191.000.

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Burnett, Patricia A. Specimen funnel. 267,118, 11-30-82, Cl. D24-54.000.

Caranica, Gloria, to Quaker Oats Company, The. Toy carrying basket. 267,099, 11-30-82, Cl. D21-59.000.

Carlson, Arthur R., to Brian Davis and Company Proprietary Limited. Covered canister. 267,071, 11-30-82, Cl. D7-79.000.

Caulkett, Lawrence F. Table base. 267,068, 11-30-82, Cl. D6-196.000.

Chadima, George E., Jr., to Norand Corporation. Modular computer system console. 267,092, 11-30-82, Cl. D14-102.000.

Citizen Watch Company, Ltd.: *See*—
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Connelly, Richard E., to Contractor Equipment Manufacturers, Inc. Front for fireplace insert or similar article. 267,112, 11-30-82, Cl. D23-93.000.

Contractor Equipment Manufacturers, Inc.: *See*—
Connelly, Richard E., 267,112, Cl. D23-93.000.

Cook, Richard L. Saw fencestop. 267,095, 11-30-82, Cl. D15-140.000.

Cubbage, William W., Jr. Child's rocker. 267,055, 11-30-82, Cl. D6-10.000.

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Kinchen, Choice R.; and Phillips, Roy D., 267,069, Cl. D6-210.000.

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Doi, Keiichiro, to Sharp Corporation. Magnetic card for microwave oven. 267,094, 11-30-82, Cl. D14-117.000.

Doodson, Peter J., to U.S. Philips Corporation. Dictating machine. 267,089, 11-30-82, Cl. D14-3.000.

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Linke, Norbert H. J., 267,053, Cl. D3-58.000.

Erb, Christian O. Fishing lure. 267,106, 11-30-82, Cl. D22-28.000.

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Everitt, Delmar K.: *See*—
Goldfarb, Adolph E.; and Everitt, Delmar K., 267,101. Cl. D21-81.000.

Fabian, Wolfgang, to American Standard Inc. Faucet. 267,109, 11-30-82, Cl. D23-25.000.

Feighery, James M. Log lifter. 267,074, 11-30-82, Cl. D23-138.200.

Four Star Corporation: *See*—
Ingram, Charles E., 267,087, Cl. D12-157.000.

Fuller, Walter T. Paint roller cleaner. 267,123, 11-30-82, Cl. D32-35.000.

Gerber Legendary Blades: *See*—
Loveless, Robert W., 267,104, Cl. D22-1.000.

Gerber Products Company: *See*—
Bubelis. Gediminas J., 267,116, Cl. D24-46.000.

Goldfarb, Adolph E.; and Everitt, Delmar K., to Goldfarb, Adolph E. Toy motorcycle. 267,101, 11-30-82, Cl. D21-81.000.
Goodyear Tire & Rubber Company, The: *See*—
Hammond, Philip S., 267,086, Cl. D12-147.000.
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Gray, Keith W. Dual compartment display case or similar article. 267,065, 11-30-82, Cl. D6-173.000.
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Scotton, Janet B.; and Hawes, Mark R., 267,122, Cl. D28-02.000.
Hayashi, Shigeaki: *See*—
Kobayashi, Yoshiaki; and Hayashi, Shigeaki, 267,093, Cl. D14-106.000.
Hori, Kiyoshi, to Nippon Paint Co., Ltd. Paint roller. 267,054, 11-30-82, Cl. D4-38.100.
Hurtig, Sheldon H., to Kraft, Inc. Jar or the like. 267,076, 11-30-82, Cl. D9-370.000.
Ingram, Charles E., to Four Star Corporation. Tie down bracket for a luggage rack. 267,087, 11-30-82, Cl. D12-157.000.
International Business Machines Corporation: *See*—
Noel, Howard S., 267,127, Cl. D99-28.000.
Iwamoto, Masahiro. Combined toothpaste dispenser and toothbrush holder. 267,060, 11-30-82, Cl. D6-87.000.
Johnson, William H., to Shenandoah Manufacturing Co. Inc. Dual thermostat temperature and time circuit control assembly. 267,079, 11-30-82, Cl. D10-50.000.
Johnson, William H., to Shenandoah Manufacturing Co. Inc. Power control unit for environmentally-controlled poultry buildings or the like. 267,096, 11-30-82, Cl. D15-148.000.
Jonebrant, Charles K. Pallet. 267,126, 11-30-82, Cl. D34-38.000.
Joseph, Stanley M., to Distinctive Appliances, Inc. Hood and rack assembly. 267,072, 11-30-82, Cl. D23-151.000.
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Rock, Erich; and Brunner, Josef, 267,066, Cl. D6-191.000.
Kabaya, Harumichi, to Citizen Watch Company, Ltd. Wrist watch. 267,077, 11-30-82, Cl. D10-32.000.
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Wadstrom, Per, 267,075, Cl. D8-300.000.
Kenrick, Joyce. Toy manatee. 267,103, 11-30-82, Cl. D21-157.000.
Kinchen, Choice R.; and Phillips, Roy D., to Custom Safety Products. Drilling rig rotary table anti-skid safety pad or similar article. 267,069, 11-30-82, Cl. D6-210.000.
Kiser, Cecil M., Jr., to Nep Sales, Inc. Motorcycle cruise control. 267,085, 11-30-82, Cl. D12-174.000.
Kobayashi, Yoshiaki; and Hayashi, Shigeaki, to Sharp Corporation. Teller machine. 267,093, 11-30-82, Cl. D14-106.000.
Koehm, Ronald E. Chair. 267,057, 11-30-82, Cl. D6-67.000.
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Lefevre, Jean-Pierre, to Tefal S.A. Handle for a lid of cooking vessels. 267,073, 11-30-82, Cl. D7-393.000.
Lendvay, Joseph G.: *See*—
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Lentz, John A. Towel roll holder. 267,062, 11-30-82, Cl. D6-97.000.
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Locker, Howard W. Recirculation blower. 267,115, 11-30-82, Cl. D23-151.000.
Lopez-Benitez, Carlos L., to Monarch Furniture Corp. Sofa. 267,056, 11-30-82, Cl. D6-63.000.
Loveless, Robert W., to Gerber Legendary Blades. Knife. 267,104, 11-30-82, Cl. D22-1.000.
Luoma, Harold E. Drain board. 267,125, 11-30-82, Cl. D32-56.000.
Lynch, Patrick E., Jr.; and Wimsatt, James M., to WLN Products. Air purifier. 267,114, 11-30-82, Cl. D23-149.000.
Magnusson, Ingvar. Toy excavator. 267,100, 11-30-82, Cl. D21-79.000.
Markarian, Albert E. Combined dispenser and applicator. 267,124, 11-30-82, Cl. D32-45.000.
Maugirard, Jean C. Frame for bed with tester. 267,058, 11-30-82, Cl. D6-83.000.
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Ostrom, James G. Belt-clip camera holder. 267,050, 11-30-82, Cl. D2-400.000.
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20 4,360,976
86 4,360,977

CLASS 36

114 4,360,978
121 4,360,979

CLASS 37

117.5 4,360,980
141 R 4,360,982
141 T 4,360,981
233 4,360,983

CLASS 38

140 4,360,984

CLASS 42

6 4,360,985

CLASS 43

82 4,360,986
122 4,360,987

CLASS 44

56 4,361,422

CLASS 46

39 4,360,988

CLASS 47

65 4,360,989

CLASS 51

410 4,360,990

CLASS 52

29 4,360,991
309.4 4,360,992
365 4,360,993
744 4,360,994

CLASS 53

437 4,360,995
469 4,360,996
528 4,360,997

CLASS 55

100 4,361,423
205 4,361,424
218 4,361,425
257 PV 4,361,426
279 4,361,427

CLASS 56

10.2 4,360,998
11.3 4,360,999
12.8 4,361,001
13.4 4,361,000
27.5 4,361,002

CLASS 57

22 4,361,003
100 4,361,004
117 4,361,005
304 4,361,006
409 4,361,007

CLASS 60

521 4,361,008
659 4,361,009
757 4,361,010

CLASS 62

3 4,361,011
82 4,361,012
223 4,361,013
237 4,361,014
238.4 4,361,015
374 4,361,016

CLASS 65

29 4,361,428
67 4,361,429
99.5 4,361,430
4,361,431
104 4,361,432
116 4,361,433
265 4,361,434

CLASS 66

207 4,361,017

CLASS 68

43 4,361,018
62 4,361,019

CLASS 71

66 4,361,435
86 4,361,436
93 4,361,437
98 4,361,438
106 4,361,439
118 4,361,440

CLASS 72

57 4,361,020
71 4,361,021
99 4,361,022
209 4,361,023
379 4,361,024
381 4,361,025

CLASS 73

23 4,361,026
4,361,027
28 4,361,028
37.7 4,361,029
40.5 R 4,361,030
61.1 R 4,361,031
64.4 4,361,032
4,361,033
81 4,361,034
104 4,361,035
116 4,361,036
295 4,361,037
4,361,038
313 4,361,039
503 4,361,040
579 4,361,041
603 4,361,042
620 4,361,043
623 4,361,044
654 4,361,045
711 4,361,046
721 4,361,047
729 4,361,048
861.05 4,361,049
861.47 4,361,050
861.54 4,361,051
863 4,361,052
864.53 4,361,053

CLASS 74

5.22 4,361,055
5.6 D 4,361,054
25 4,361,056
551.4 4,361,057
665 GD 4,361,058
759 4,361,059
866 4,361,060

CLASS 75

10 R 4,361,441
57 4,361,442
128 W 4,361,443

CLASS 82

4 R 4,361,061

CLASS 83

71 4,361,062
4,361,063
319 4,361,064

CLASS 84

1.01 Re.31,090
1.03 4,361,065
4,361,066
1.27 4,361,067
299 4,361,068
346 4,361,069
478 4,361,070

CLASS 89

1.815 4,361,071
154 4,361,072

CLASS 91

47 4,361,073
279 4,361,074
420 4,361,075
422 4,361,076
500 4,361,077

CLASS 92

31 4,361,078

CLASS 98

50 4,361,079

CLASS 99

277.1 4,361,080
348 4,361,081
450.4 4,361,082
483 4,361,083
516 4,361,084

CLASS 101

23 4,361,085
93.18 4,361,086
109 4,361,087
124 4,361,088
182 4,361,089
352 4,361,090
382 MV 4,361,091
426 4,361,092

CLASS 102

447 4,361,093

CLASS 104

168 4,361,094
292 4,361,095

CLASS 105

248 4,361,096
406 R 4,361,097

CLASS 108

152 4,361,098
4,361,099

CLASS 110

238 4,361,100

CLASS 112

110 4,361,101

CLASS 114

56 4,361,102
246 4,361,103
258 4,361,104
260 4,361,105

CLASS 116

203 4,361,106
266 4,361,107

CLASS 118

265 4,361,108
503 4,361,111
655 4,361,109
661 4,361,112
665 4,361,110
694 4,361,113
723 4,361,114

CLASS 119

29 4,361,115
51 R 4,361,116
52 B 4,361,117

CLASS 123

41.15 4,361,118
52 M 4,361,119
90.55 4,361,120
198 DB 4,361,121
266 4,361,122
308 4,361,123
440 4,361,124
549 4,361,125
585 4,361,126
587 4,361,127
592 4,361,128
622 4,361,129

CLASS 125

36 4,361,130

CLASS 126

123 4,361,131
221 4,361,132
408 4,361,133
417 4,361,134
437 4,361,135
438 4,361,136

CLASS 128

1 B 4,361,137
4 4,361,138
6 4,361,139
53 4,361,140
69 4,361,141
80 C 4,361,142
87 R 4,361,143
92 A 4,361,144
204.26 4,361,145
206.12 4,361,146
214 D 4,361,148
214 E 4,361,147
215 4,361,149
263 4,361,150
285 4,361,151
419 P 4,361,153
660 4,361,154
763 4,361,155

CLASS 131

90 4,361,156
111 Re.31,091

CLASS 132

7 4,361,157
9 4,361,158
41 R 4,361,159
73 4,361,160

CLASS 133

3 R 4,361,161
4 A 4,361,162

CLASS 134

3 4,361,444
4,361,445
8 4,361,446
199 4,361,163

CLASS 136

246 4,361,717
256 4,361,718

CLASS 137

14 4,361,164
62 4,361,167
69 4,361,165
117 4,361,166
315 4,361,168
596.13 4,361,169
625.29 4,361,170

CLASS 139

348 4,361,171
371 4,361,172

CLASS 140

1 4,361,173
140 4,361,174

CLASS 141

283 4,361,175
362 4,361,176

CLASS 145

33 E 4,361,177

CLASS 148

11.5 F 4,361,447
15 4,361,448
26 4,361,449

CLASS 149

19.91 4,361,450

CLASS 152

172 4,361,178

CLASS 156

64 4,361,451
71 4,361,452
79 4,361,453
133 4,361,454
149 4,361,455
179 4,361,456
224 4,361,457
264 4,361,458
425 4,361,459
568 4,361,460
643 4,361,461

CLASS 159

6 W 4,361,462

CLASS 160

176 R 4,361,179
377 4,361,180

CLASS 162

9 4,361,463
49 4,361,464
156 4,361,465
207 4,361,466
336 4,361,467

CLASS 164

522 4,361,181

CLASS 165

10 4,361,182
82 4,361,183
165 4,361,184

CLASS 166

84 4,361,185
295 4,361,186
326 4,361,187
381 4,361,188

CLASS 169

14 4,361,189
48 4,361,190

CLASS 172

146 4,361,191

CLASS 174

6 4,361,719
16 HS 4,361,720
92 4,361,721
93 4,361,722
102 SC 4,361,723
129 B 4,361,724

CLASS 175

45 4,361,192
61 4,361,193
107 4,361,194
297 4,361,195
320 4,361,196
407 4,361,197

CLASS 177

141 4,361,198
154 4,361,199

CLASS 178

19 4,361,725
23 R 4,361,726

CLASS 179

1 GS 4,361,728
1 J 4,361,727
1.5 R 4,361,729
5 R 4,361,730
6.3 R 4,361,731
18 AH 4,361,732
82 4,361,733
107 R 4,361,734
111 E 4,361,735
121 R 4,361,736
158 R 4,361,737

CLASS 180

14 R 4,361,200
19 H 4,361,201
168 4,361,202
213 4,361,203
302 4,361,204
329 4,361,205

CLASS 181

255 4,361,206

CLASS 184

1.5 4,361,207

CLASS 187

1 R 4,361,208
17 4,361,209

CLASS 188

43 4,361,210
296 4,361,211
335 4,361,214
377 4,361,212
378 4,361,213

CLASS 190

18 A 4,361,215

CLASS 192

36 4,361,216
103 FA 4,361,217

CLASS 194

102 4,361,218

CLASS 198

315 4,361,219
330 4,361,220
459 4,361,221
519 4,361,222
751 4,361,223
781 4,361,224
4,361,225

CLASS 200

6 R 4,361,738
16 C 4,361,739
61.45 R 4,361,740
85 A 4,361,741
144 B 4,361,742
153 V 4,361,743

CLASS 202

239 4,361,468

CLASS 203

99 4,361,469

CLASS 204

15 4,361,470
128 4,361,471
192 R 4,361,472
195 M 4,361,473
239 4,361,474
252 4,361,475

CLASS 206

45.31 4,361,226
45.32 4,361,227
216 4,361,228
339 4,361,229
345 4,361,230
362 4,361,231
386 4,361,232
387 4,361,233
505 4,361,234
527 4,361,235
611 4,361,236
631 4,361,237

CLASS 208

11 LE 4,361,476
67 4,361,477
130 4,361,478
139 4,361,479

CLASS 209

453 4,361,480
576 4,361,238
626 4,361,239
674 4,361,240

CLASS 210

85 4,361,481
198.2 4,361,482
445 4,361,483
632 4,361,484
636 4,361,485
722 4,361,486
759 4,361,487
776 4,361,488
780 4,361,489
787 4,361,490

CLASS 211

123 4,361,241

CLASS 212

253 4,361,242

CLASS 215

206 4,361,243
253 4,361,244

CLASS 219

10.55 B Re.31,094
10.55 F 4,361,744
69 G 4,361,745
70 4,361,746
75 4,361,747
121 PD 4,361,749
121 PP 4,361,748
297 4,361,750
522 4,361,751

CLASS 220

2 4,361,245
67 4,361,246
88 R 4,361,247
254 4,361,248
4,361,249
266 4,361,250
269 4,361,251
344 4,361,252

CLASS 222

162 4,361,253
196 4,361,254
321 4,361,255
383 4,361,256
464 4,361,257

CLASS 224

150 4,361,258
211 4,361,259

CLASS 226

30 4,361,260

CLASS 228

103 4,361,261
118 4,361,262

CLASS 229

2.5 EC 4,361,263
15 4,361,264
16 R 4,361,265
17 SC 4,361,270
32 4,361,266
39 R 4,361,267
62.5 4,361,268
69 4,361,269

CLASS 232

17 4,361,271

CLASS 235

64.7 4,361,752
101 4,361,753
381 4,361,754
476 4,361,755
487 4,361,756
4,361,757

CLASS 236

1 G 4,361,272
11 4,361,273
21 B 4,361,274
88 4,361,275

CLASS 237

56 4,361,276

CLASS 238

14 4,361,277

CLASS 239

8 4,361,278
56 4,361,279
76 4,361,280
265.37 4,361,281
383 4,361,282
415 4,361,283
422 4,361,284
424 4,361,285
453 4,361,286
703 4,361,287
4,361,288

CLASS 241

32 4,361,289
57 4,361,290
79 4,361,291

CLASS 242

47.01 4,361,292
84.2 R 4,361,293
107.7 4,361,294

CLASS 244

33 4,361,295
54 4,361,296
97 4,361,297
134 A 4,361,298
216 4,361,299

CLASS 246

5 4,361,300
34 R 4,361,301

CLASS 248

56 4,361,302
188.1 4,361,303
544 4,361,304
553 4,361,305

CLASS 249

106 4,361,306
118 4,361,307

CLASS 250

203 R 4,361,758
223 R 4,361,759
231 GY 4,361,760
251 4,361,761
4,361,762
381 4,361,763
486.1 4,361,765

CLASS 251

134 4,361,308
137 4,361,309
144 4,361,310

CLASS 252

70 4,361,491
175 4,361,492
184 4,361,493
299.63 4,361,494
411 R 4,361,495
416 4,361,496
423 Re.31,093
426 4,361,497
429 B 4,361,498
430 4,361,499
4,361,500
435 4,361,501
455 Z 4,361,502
4,361,503
463 4,361,504
628 4,361,505

CLASS 254

200 4,361,311
276 4,361,312

CLASS 256

13.1 4,361,313
65 4,361,314

CLASS 260

112 B 4,361,509
4,361,510
239.3 D 4,361,511
245.2 R 4,361,513
4,361,514
245.2 T 4,361,512
396 N 4,361,516
412.5 4,361,517
453 P 4,361,518
463 4,361,519
505 P 4,361,520
544 F 4,361,521

CLASS 261

66 4,361,522
92 4,361,523
150 4,361,524
152 4,361,525

CLASS 264

3 C 4,361,526
25 4,361,527
28 4,361,528
65 4,361,529
120 4,361,530
161 4,361,531
188 4,361,532
258 4,361,533

CLASS 266

99 4,361,315

CLASS 269

43 4,361,316

CLASS 271

3.1 4,361,317
202 4,361,318
209 4,361,319
288 4,361,320
292 4,361,321

CLASS 272

118 4,361,323
123 4,361,324
126 4,361,322

CLASS 273

67 A 4,361,325
81 D 4,361,326
119 R 4,361,327
156 4,361,328
162 E 4,361,329
372 4,361,330

CLASS 277

1 4,361,331
3 4,361,332
12 4,361,333
16 4,361,334
204 4,361,335
207 A 4,361,336
221 4,361,337

CLASS 280

1.11 R 4,361,338
21 R 4,361,339
33.99 A 4,361,340
415 R 4,361,341
491 E 4,361,342
605 4,361,343
613 4,361,344
637 4,361,345
707 4,361,346
814 4,361,347

CLASS 285

31 4,361,348
110 4,361,349

CLASS 292

251 4,361,350
321 4,361,351

CLASS 293

120 4,361,352

CLASS 294

86.1 4,361,353

CLASS 296

1 C 4,361,354
37.1 4,361,355

CLASS 297

129 4,361,356
297 4,361,357
326 Re.31,092

CLASS 301

6 E 4,361,358
37 PB 4,361,359
127 4,361,360

CLASS 303

6 C 4,361,361
22 A 4,361,362

CLASS 305

22 4,361,363
58 R 4,361,364

CLASS 307

3 4,361,766
117 4,361,767
245 4,361,768
353 4,361,769
426 4,361,770
497 4,361,771

CLASS 308

2 R 4,361,365
6 C 4,361,366
78 4,361,367

CLASS 310

49 R 4,361,772
71 4,361,773
90 4,361,774
248 4,361,775
268 4,361,776
330 4,361,777
348 4,361,778

CLASS 312

138 R 4,361,368
223 4,361,369

CLASS 313

221 4,361,779
222 4,361,780
409 4,361,781

CLASS 315

73 4,361,782
374 4,361,783
382 4,361,784
389 4,361,785
403 4,361,786

CLASS 316

2 4,361,370

CLASS 318

6 4,361,787
83 4,361,788
254 4,361,789
696 4,361,790
723 4,361,791
729 4,361,792
4,361,793
800 4,361,794

CLASS 320

26 4,361,795

CLASS 322

99 4,361,796

CLASS 323

316 4,361,797
324 4,361,798

CLASS 324

52 4,361,799
53 4,361,800
58.5 R 4,361,801
65 R 4,361,802
71 CP 4,361,803
79 R 4,361,804
207 4,361,805
216 4,361,806
309 4,361,807
366 4,361,808
426 4,361,809
468 4,361,810

CLASS 328

127 4,361,811
233 4,361,812

CLASS 329

132 4,361,813

CLASS 330

4.9 4,361,814
254 4,361,815
288 4,361,816

CLASS 332

9 T 4,361,817

CLASS 333

26 4,361,818
109 4,361,819
206 4,361,820
219 4,361,821

CLASS 335

303 4,361,822

CLASS 336

212 4,361,823

CLASS 338

171 4,361,824

CLASS 339

17 R 4,361,371
64 M 4,361,372
89 M 4,361,373
90 R 4,361,374
91 R 4,361,375
140 C 4,361,376

CLASS 340

52 C 4,361,825
52 F 4,361,826
65 4,361,827
107 4,361,828
134 4,361,829
146.3 AC 4,361,830
347 NT 4,361,831
505 4,361,832
533 4,361,833
575 4,361,834
624 4,361,835
825.2 4,361,836
825.72 4,361,837
870.02 4,361,838
870.13 4,361,839

CLASS 343

7.7 4,361,840
754 4,361,841

CLASS 346

1.1 4,361,842
4,361,843
76 PH 4,361,844
140 R 4,361,845

CLASS 350

8 4,361,377
36 4,361,378
91 4,361,379
96.21 4,361,380
96.23 4,361,381
126 4,361,382
162.12 4,361,383
174 4,361,384
357 4,361,385
363 4,361,386

CLASS 354

43 4,361,387
106 4,361,388
139 4,361,389
198 4,361,390
288 4,361,391
302 4,361,392

CLASS 355

3 R 4,361,394
3 SH 4,361,393
14 R 4,361,395
15 4,361,396
4,361,397
75 4,361,398
4,361,399

CLASS 356

23 4,361,400
36 4,361,401
73.1 4,361,402
336 4,361,403

CLASS 357

20 4,361,846
23 4,361,847

CLASS 358

1 4,361,848
65 4,361,850
84 4,361,851
145 4,361,852
167 4,361,853
181 4,361,854
312 4,361,849

CLASS 360

39 4,361,855
64 4,361,856
77 4,361,857
92 4,361,858
96.5 4,361,859
120 4,361,860

CLASS 361

391 4,361,861
404 4,361,862

CLASS 362

32 4,361,863
62 4,361,864

CLASS 363

19 4,361,865
129 4,361,866
145 4,361,867

CLASS 364

200 4,361,868
4,361,869
424 4,361,870
426 4,361,871
483 4,361,872
707 4,361,873
710 4,361,874
724 4,361,875
900 4,361,876
4,361,877
4,361,878

CLASS 366

2 4,361,404
7 4,361,405
25 4,361,406
340 4,361,407

CLASS 367

141 4,361,879

CLASS 368

10 4,361,408
80 4,361,409
157 4,361,410

CLASS 369

30 4,361,882
33 4,361,880
55 4,361,883
77 4,361,884
126 4,361,881

CLASS 370

13 4,361,885
69.1 4,361,886

CLASS 372

50 4,361,887
55 4,361,888
95 4,361,889

CLASS 373

147 4,361,716

CLASS 375

1 4,361,890
4,361,891
14 4,361,892
27 4,361,893
80 4,361,894
87 4,361,895
96 4,361,896
110 4,361,897
114 4,361,898

CLASS 376

159 4,361,534
215 4,361,535

CLASS 378

14 4,361,764
21 4,361,899
98 4,361,900
106 4,361,901
152 4,361,902

CLASS 411

402 4,361,412

CLASS 414

277 4,361,411
752 4,361,413

CLASS 415

83 4,361,414

CLASS 416

134 A 4,361,415
218 4,361,416

CLASS 417

13 4,361,417
54 4,361,418

CLASS 418

73 4,361,419

CLASS 422

33 4,361,536
56 4,361,537
62 4,361,538
68 4,361,539
4,361,540

CLASS 423

20 4,361,541
81 4,361,542
290 4,361,543

CLASS 424

1 4,361,544
19 4,361,545
4,361,546
56 4,361,547
78 4,361,548
85 4,361,549
4,361,550
94 4,361,551
105 4,361,552
177 4,361,553
180 4,361,554
200 4,361,555
216 4,361,556

CLASSIFICATION OF PATENTS

226	4,361,557
243	4,361,558
	4,361,559
246	4,361,560
247	4,361,561
250	4,361,562
	4,361,563
	4,361,564
	4,361,565
256	4,361,566
	4,361,567
263	4,361,568
	4,361,569
	4,361,570
266	4,361,571
	4,361,572
267	4,361,573
270	4,361,574
273 R	4,361,575
274	4,361,576
285	4,361,577
	4,361,578
287	4,361,579
	4,361,580
312	4,361,581
317	4,361,582
319	4,361,583
338	4,361,584
342	4,361,585
CLASS 426	
7	4,361,586
42	4,361,587
104	4,361,588
270	4,361,589
480	4,361,590
557	4,361,591
579	4,361,592
627	4,361,593
CLASS 427	
27	4,361,594
39	4,361,595
41	4,361,596
53.1	4,361,597
74	4,361,598
90	4,361,599
93	4,361,600
123	4,361,601
	4,361,602
126.5	4,361,603
423	4,361,604
424	4,361,605
CLASS 428	
17	4,361,606
35	4,361,607
36	4,361,608
90	4,361,609
95	4,361,610
96	4,361,611
106	4,361,612
119	4,361,613
138	4,361,614
203	4,361,615
215	4,361,616
224	4,361,617
234	4,361,618
	4,361,619
329	4,361,621
341	4,361,620
363	4,361,622
394	4,361,623
398	4,361,624
412	4,361,625
420	4,361,626
425.9	4,361,627
475.8	4,361,628
553	4,361,629
613	4,361,630
CLASS 429	
40	4,361,631
145	4,361,632
162	4,361,633
CLASS 430	
5	4,361,634
14	4,361,635
32	4,361,636
58	4,361,637
	4,361,638
204	4,361,639
275	4,361,640
313	4,361,641
325	4,361,642
396	4,361,643
422	4,361,644
505	4,361,645
CLASS 431	
346	4,361,420
CLASS 435	
4	4,361,646
7	4,361,647
10	4,361,648
119	4,361,649
	4,361,650
161	4,361,651
188	4,361,652
	4,361,653
CLASS 455	
2	4,361,903
67	4,361,904
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	86	267,059
	87	267,060
	93	267,061
	97	267,062
	156	267,063
	167	267,064
	173	267,065
	191	267,066
		267,067
	196	267,068
	210	267,069
D7—	30	267,070
	79	267,071
	393	267,073
D8—	300	267,075
D9—	370	267,076
D10—	32	267,077
	46.1	267,078
	50	267,079
D11—	107	267,080
	149	267,081
		267,082
D12—	85	267,084
	147	267,086
	157	267,087
	174	267,085
	318	267,083
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	53	267,090
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	117	267,094
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